JOURNAL OF GAS LIGHTING & WATER SUPPLY.

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VOL. CXXXI., No. 2726.] TUESDAY, AUGUST 10, 1915. [67TH YEAR.

EDITORIAL NOTES.

Facing the Situation.

THE half-yearly meetings of gas companies are now in full swing; and there has been one outstanding feature at those which have come under our immediate observation. It is that the proprietors are facing the peculiar situation with good heart. They know that in the circumstances changes in trading conditions and issues were inevitable; they know that the best and most competent Board of Directors could not weather a storm of such protracted length and unprecedented character as that through which we are passing (and of which we cannot foretell the end) without incurring some temporary injury. Commonsense tells them all this; but a matter that must be most encouraging to Boards of Directors is that, at none of the meetings so far held, has there been a word of criticism of the actions of the Directors in legislating for these unparalleled times and in preparing for any eventuality. Peace-time criticisms of management appear very insignificant as we glance back at them in the light of this unqualified confidence in administrations doing the best possible in the sinister circumstances; and that confidence is in evidence on all hands. It was to be seen last Friday at the meeting of the Gas Light and Coke Company. The price of gas has returned to the figure that in peace times under the former *régime* held fast for some years as a normal one; and the dividend has fallen to £4 4s. per cent., with a heavier liability attached in respect of income-tax. Nevertheless, the attendance of proprietors at the meeting was moderate; and we cannot remember a meeting at which an increase of dividend fell due owing to a price reduction when the enthusiasm equalled that (in the presence of the drop in dividend) which punctuated on this occasion the speech and the explanations of the Governor (Sir Corbet Woodall, D.Sc.), and which gave such a pronounced tone of sincerity to the vote of thanks to the Board, officers, and employees. What rules to-day cannot be avoided; and the proprietors know that sacrifice has to be made on every side, and the better the heart with which it is made, the more each one does his or her part to reduce the weight of the burden, the better for all.

It is no use looking at the position with a heavy heart. The more cheerful we are, the more spirit that is displayed, the more matters are looked fairly and squarely in the face, the more we work to crush opposing forces and to hasten the day of freedom from the terrible world conflict, the better. The Governor did not deal with the difficulties as though a heavy burden was upon him. He faced these difficulties; he drew them out in all their nakedness; and he dismissed them by saying that what has happened is "the fortune of "war." Instancing this are his remarks as to coal:

> Had the contracts been duly fulfilled, the small increase in the price of gas would have carried us through; but this was not to be. Deliveries fell more and more into arrear; so, powerless to obtain our due supplies, we were constrained to replenish our vanishing stocks by purchasing such coal as we could at extravagant prices, with freights conforming. . . . What happened was the fortune of war. We discovered that it was impossible to carry on business upon ordinary lines, trusting to the making of contracts at the usual time. In March, the outlook had grown very black. Our stocks of coal were reduced to a few days' supply.

Then followed an explanation as to what has been done to improve transport and other conditions. But the above few quoted lines tell us little of the weight of responsibility and anxiety, and of the plotting and planning to secure a huge area of London in the matter of gas supply, and the Company against having any interruption in the discharge of their obligations. The strain was great. The proprietors realized that no human agency could have done more for the vast organization in which they are partners; and that the issue is a real triumph for the Governor, Board, and officers.

In some other industries, there are just now no dividends for the shareholders; and in some there are larger dividends. But the system of gas trading has been so built-up and so ordered that even in times barren almost of favourable condition, a dividend can be earned, and, where there is co-partnership, something too for the employee partners, in addition to the dividends on their accumulations of capital. The Gas Light Company have earned the dividend they are allowed to declare at the current price of gas; and they are carrying forward a larger balance than was brought into the past half year. This is politic, seeing that the Company depend so much upon this balance for working capital. But there is one thing that should be impressed upon the public, and it is that any increase of the carry-forward, in the case of sliding-scale co-partnership concerns, is the product not of an increase in the price of gas only, but of the reduction of dividend and of the profit portion of the employee co-partners. The increase of the balance is a safeguard; and, with it before him, Sir Corbet entertains the hope that "the present price of gas may not continue neces-"sary for any long period." This is satisfactory; but it may be accepted as a certainty that the Board will not take any definite step in the matter of a reduction until they are absolutely assured that they will not have to retrace it. When the price was raised to the requirement under war conditions, the "fundamental data" available were not sufficient to enable an exact calculation of the position. Now so far as it is possible to presage, the worst conditions are known, and the affairs of the industry have settled down upon a war basis, which enables a better estimate to be made—thanks in part to what the Government have done (due largely to the initiative and perseverance of the gas industry) in the matters of coal prices and exports. In making reductions, however, it will be very necessary to be circumspect in relation to the future. In gauging prospects and a safe margin in the shape of a carry-forward, it must not, for instance, be forgotten that, at the close of the war, gas undertakings will be variously affected. In the districts of some, the industries will be very busy; in the districts of others, there may be a long period of flatness. All will be striving for recuperation. But employment will vary with districts; and working-class patronage will rise and fall accordingly, and that is a patronage that is of vital importance to the gas industry. Post-war conditions in this respect are more uncertain than are the conditions of the present, now that they are fairly well settled, though everything that a gas undertaking requires is dearer to-day than before the war.

Among the salient items in the Governor's speech was the estimate he made as to the increase in working expenses represented by the standard figure, under the Coal Price Limitation Act, of 4s. per ton upon the pithead prices of 1913-14. It means an increased working expense to the Company of no less than £350,000 a year. This is a sum which strikes home with considerable force; but it has the satisfaction about it of showing clearly where the Company stand, and so enables estimates to be framed with greater precision. Then the Coal Exports Committee may take it as a testimony to the value of their work in protecting this country in respect of coal, that the Gas Light Company can now say that their stocks have gained a bulk which gives confidence in respect of next winter, providing the intervening months continue to yield their proportion of supplies. Residuals have improved, and are improving, in market value—coke especially. Whether the price of coke will be affected by the accumulating stocks of coal cannot be said. But it may be taken for granted that the Coal Price Limitation Act has put upon coal a war price to which the coal-owners will work; and this fact may be accepted as favourable to the continuance of good prices for coke. We hold for the time the markets abroad for sulphate of ammonia; and the best policy is to see we get well established in them. Tar is also in better case. Supplementing these facts is the one that sales of gas have, subject to weather conditions,

reached what may be taken as the full extent of backward move (where such has obtained) so far as any war conditions affect them. In view of these conditions, gas managements can look forward, while keeping strict watch and ward over affairs so as not to be caught napping, to a more composed state so far as their immediate business is concerned. This is one of the impressions gained at the meetings of the Gas Light and Coke and other companies.

The Burden of Coal and Freightage.

Coals and freights are the uncompromising causes of the considerable change that has come over the face of the accounts of the South Metropolitan Gas Company during the past half year; and these causes must be blamed wholly for the increase in the price of gas, the lower rate of dividend, and the smaller participation (a reduction of £11,029 for the year) in the profits of the employee co-partners. Against the reduction to the last-named must, however, be set a more than counterbalancing amount distributed in war bonus and contributed to the war fund (£17,617), and £4000 extra paid over to the superannuation, sick, and accident funds. "Wholly" is a term requiring explanation. The gas business, owing to the lighting restrictions, has been materially reduced; but it is unnecessary to look back far to find the June half year when the gas business was no larger than it was in the past six months, when the price of gas was only 2s. 2d. per 1000 cubic feet (instead of 2s. 4d. in the first three months and 2s. 10d. in the second), when the dividend was at the rate of £5 9s. 4d. per cent. per annum (instead of at the rate of £4 8s. per cent.), and when the employee co-partners were enjoying the maximum attained payment under the beneficial co-partnership scheme. These statements brook no contradiction; for the facts are matters of recorded history. Therefore the term "wholly" is justified. The reduction in the volume of gas business is, of course, temporary; the scope for business remains unaffected—in fact, the data supplied in the past half-year's accounts show quite good progress in the outlets for consumption. This is promising for the future. But it is very clear that the Directors in assessing the amount by which the price of gas would have to be increased finely calculated the minimum; for, with 2d. increase in the first quarter and 6d. additional in the second quarter, and with the payment for dividend reduced by £1 1s. 4d. per annum, there will only be an increase of £3589 in the amount to be carried forward. When, however, it is seen that the additional net cost of coal in the half year, compared with the first half of 1914, was £112,456, and that the total increase in the receipts for gas was £66,680, it is fortunate for the consumers and the proprietors that the repairs and maintenance of works were reduced by £23,944, and the distribution expenses (there were considerably lessened charges all through for repairs, maintenance, and renewals) were diminished by £52,228. These figures are an index to the wisdom of the Directors in favourable pre-war years.

This being purely a coal gas company (without carburetted water-gas plant), the experiences of the concern in these times are interesting to bring into comparison with other undertakings employing carburetted water gas, and especially as the Company have not been, until now, in possession of steamers of their own for the transport of coal. To make 6,936,706,000 cubic feet of gas in the half year, 569,539 tons of coal were used. This is only a reduction of 3617 tons on the corresponding half of 1914, when 213,925,000 cubic feet more gas were made. There would have been a larger reduction in the tonnage if the make of gas per ton had been the same as in the June half of last year. In that period, the production per ton was 12,476 cubic feet; last half year it was 12,179 cubic feet—a falling-off of 297 cubic feet per ton. In the second half of last year, the make was 12,614 cubic feet. It may be taken for granted that the decrease in the production per ton was due not to lax working, but to the quality of the coal delivered to the Company. At any rate, we shall think so, unless the Chairman (Mr. Charles Carpenter, D.Sc.) puts forward a fresh reason at the meeting of the proprietors to-morrow. In justice to the officers and men, the matter should be explained, as there has never been a half year when, on economic grounds, there was greater call for a high gas make per ton of coal. Although the quantity of coal carbonized was 3617 tons less, the cost was £592,260, or no less than £155,990 more than in the first half of 1914. A fortunate thing is that residuals, in yielding £323,315 in the six months, contributed more by £43,534 than in the June half of last year. This being so, the net cost of coal last half year was £268,945, compared with £156,489, or £112,456 more. In other words, the expenditure on coal was upwards of two-thirds higher than in the first half of 1914, regarding which period the Directors a year ago said "the high cost of coal and its freight has "been the cause of the deficiency"—a deficiency of £37,922 in the earnings then required to pay the dividend. In that half year, the cost of coal was 1s. 2·64d. per 1000 cubic feet made, as against 1s. 8·49d. in the past half year, or 5·85d. more. The net cost of coal (deducting residuals) was no less than 9·3d. per 1000 cubic feet of gas made last half year, compared with 5·25d. in the June six months of last year, or 4·05d. more. In considering this last figure in relation to the increase in the price of gas, there must not be forgotten the deficiency of a year ago, the reduction of the gas business last half year, the extra demands upon the revenue of the Company, and the fact that, though a smaller business was done, many of the items of expenditure remain practically the same as formerly, and therefore, in view of the lessened business, they represent a higher charge per 1000 cubic feet of gas sold.

It would be interesting to know how much of the additional cost of the coal delivered last half year was due to coal and how much to freight. Say the Directors: "This "result is entirely accounted for by the extraordinary prices "charged for coal and for its freightage to London; some "of these being nearly treble those paid in recent years." They also refer, as being significant, to the fact that the Government are at last applying to coal suppliers the same principles which have been in operation for forty years in regard to gas suppliers—viz., parliamentary regulation of the prices to be charged. As to the freight problem, this can be solved—by large companies using seaborne coal, but not by the smaller ones—by the purchase of steamers; and the Directors mention that this course has now been adopted. This is a complete change in one part of the administrative policy of the Company; and it is the war that has brought it about, though it is plain from the remark made by the Board twelve months ago as to "coal and its freight," that the question of the vagaries of rates of freight is no new one. But the experiences of the past six months have proved the climax, and the turning-point; and henceforward the Company will keep themselves free from the disturbing influences of market rates for freight from the North. Whether the experiences with coal—the price and the trouble for a time of securing deliveries—have produced more benevolent thoughts in the direction of carburetted water-gas plant, so as to have "two strings to their bow," is a matter about which the Directors do not give any indication. But this would be opposed to the policy of standardizing the consumers' lighting burners, and of maintaining uniformity of gas composition. There were times during the half year, when the Chairman and Directors and the officers were under a heavy cloud of anxiety regarding coal deliveries. It was stated, in the House of Commons just recently, by Mr. Russell Rea, M.P., the Chairman of the Coal Exports Regulation Committee, that he "believed at one period the "South Metropolitan Gas Company were within eleven "days of stoppage"—had further deliveries not been obtainable. The total figures in the accounts do not tell of the degree of anxiety that was felt. But for what they do show they may be quoted. The quantity of coal received during the half year was 534,331 tons, which was short of the quantity carbonized by 35,208 tons. The quantity in store at June 30 was 153,498 tons, or 36,339 tons less than on Dec. 31 last, and 27,558 tons less than at June 30, 1914.

It is gratifying to observe that the consumption of gas for the half year shows a decrease of only 3·73 per cent., owing to the enforced reduction of outside lighting. More especially is this satisfactory seeing that the corresponding half of 1914 gave an increase of 2·29 per cent. upon the first half of 1913, and that the second half of 1914 (embracing the first five months of war conditions) showed a decline of 4·29 per cent. The actual quantity of gas sold last half year was 6,626,723,000 cubic feet, or a reduction of 257,105,000 cubic feet, of which private business accounted for 195,754,000 cubic feet, and public lighting 61,351,000 cubic feet. With all this reduction, the sales last half year were only 102,538,000 feet behind those for the June half of 1913; so that, as before said, steps would not have to be retraced far to find the time when the Company's gas business was only of the same magnitude as last half year. It has been mentioned that in the first three months of the

past half year, the price of gas was 2s. 4d. (as compared with 2s. 2d.) and in the second three months 2s. 10d.—the latter being the lighter gas-consuming period, so that the higher price did not really affect the heaviest quarter. The total receipts for gas under these conditions amounted to £800,705, or £66,680 more for the lessened sale than in the first half of 1914—this figure being arrived at by private consumption contributing £71,467 more and public lighting £4787 less, owing to the necessity for doing as much as possible to obliterate London at night time. Rents of meters and stoves and the item of gas-fittings contributed £130,277 to the revenue, or £3269 less—this being entirely due to gas-fittings, which exhibited a reduction of £3927, while meters gave £650 more, and stoves what we should think is the record minimum increase—£8. But the expansion of the area of business is seen by the facts that the total of 372,043 ordinary and prepayment meters is an increase of nearly 4000; the 85,320 ordinary stoves, an increase of 1708; the 231,710 slot stoves, an increase of 5284; and the 50,650 gas-fires, an increase of 5248. Residuals, as previously stated, produced £323,315, or £43,534 more than in the corresponding period of 1914—thanks largely to "the increased value of fuel, and the activity in "the chemical industry." Of coke 284,880 tons were sold, contrasted with 211,733 tons; and the receipts were respectively £202,691 and £150,249, or £52,442 more. There were in stock at the end of June only 24,209 tons, as against 105,746 tons at the same date last year. Breeze, in producing £8829, contributed £259 more to revenue; while tar and tar products (we anticipate largely owing to pitch) gave £50,304, or £3568 less, and sulphate of ammonia £61,489, or £5600 less. The final result is that, including rents and transfer fees, the income of the half year amounted to £1,255,838, or an increase of £107,026, while the total expenditure was £1,066,698, or £90,855 more. The difference between the increased income and the increased expenditure being £16,171, this is the sum by which the balance (£189,140) transferred to net revenue account is higher than a year ago, when there was the £37,922 shortage in the earnings required to pay the dividend. The present carry forward will, as already said, enable the Board to meet their reduced obligations, and raise the small amount brought forward into the half year by £3589.

From the front of the report and accounts, we miss the name of the Chief Engineer; there is not a word of reference to the retirement of Mr. W. Doig Gibb in the report; and no information is given as to the cause or causes of the delay in filling the vacancy. Another change noticed is that Mr. Frank Bush has retired from the Deputy Chairmanship to the position of an ordinary Director. He has only held the more elevated office rather more than twelve months—from the time that Mr. John Mews quitted the office for an ordinary directorial chair. The new Deputy-Chairman is Mr. Kenneth P. Hawksley. These are matters upon which the Chairman is sure to speak at the meeting to-morrow.

Market Freights and Actual Cost.

Shipowners who have hitherto done a considerable coal-carrying business from the North for the three London Gas Companies—even for those who, possessing ships of their own, needed help to meet the balance of requirements over and above their own carrying capacity—may henceforth consider (unless through unforeseen circumstances temporary assistance is desired) their accounts closed with these concerns. The experiences of the so-called market rates for freights last winter, which touched the peak at 17s. 6d. per ton, and for some time moved fitfully between 10s. 6d. and 13s. 6d. per ton, and now seem to be settled at about 150 per cent. higher than normal pre-war rates—that is to say, at from 7s. to 7s. 6d. per ton, compared with about 3s. before the war—have caused the two Companies who already owned boats (the Gaslight and the Commercial) to further protect themselves and their consumers by becoming owners of additional ones, and the South Metropolitan Company, having had sufficient of the uncertainties of the market, have also now become owners, and so have secured themselves against the profit-grabbing that has been going on in shipping circles during the war. The experiences that the Gaslight and the Commercial Companies have had, as to the cost of running their own boats under war conditions, are extremely interesting, and are proof that the trading shipowners have been making full use of the war, and have been unduly magnifying the influences of current conditions in the framing of excuses for the high freights that they have been, and are, charging.

The boats that have been purchased by the Gaslight Company and the Commercial Gas Company having been bought at the present time, were not cheap as prices usually go—in fact, the prices that had perforce to be paid were high. But the figures given by Sir Corbet Woodall at the Gaslight meeting on Friday, and by Mr. W. G. Bradshaw at the Commercial meeting the day before, show that—though running has been expensive owing to the delays caused by Admiralty restrictions, "lights out" at night time, higher wages through risks of the North Sea, and so forth—the new purchases have been excellent investments, as prior experience indicated they would be. Sir Corbet stated that, with all the disturbance of ordinary conditions, and including interest and depreciation, the cost of bringing coal from the North by the Gaslight Company's own ships had only ranged from 4s. 4d. to 3s. 2d. per ton. Compare these figures with the extortionate prices that have been described as "market rates" for freight. Mr. Bradshaw, too, pointed out that, though the Commercial Company's boats were not running, and could not run, with the efficiency and economy obtaining in normal times, the cost of freight in their case had only gone up by an average of 1s. 4d. per ton, compared with the figures for the first half of 1914. This 1s. 4d. included a steamer hired at market rates (presumably before the Company purchased an additional one) for the purpose of improving stocks, as well as the double rates of pay the seamen and firemen on the Company's ships are receiving. These actual costs indicate how fair was the offer of the gas companies to the shipowners to increase the ordinary contract rates up to 5s. per ton. All the experience of the gas companies running their own boats shows that at that price the shipowners would have done remarkably well. A fair profit, however, did not suit them; their idea was to make profits in bulk while the war favoured. The three Companies can now entirely or in large measure dispense with their services—perhaps at the moment not "entirely" in the case of the Gaslight and Coke, inasmuch as only the other day their comparatively new ship the "*Fulgens*" was torpedoed without any warning by a German submarine, in pursuance of what Sir Corbet scornfully describes as the "cowardly and contemptible "lines" on which the war is being conducted by Germany. The boat (which, with the cargo, was fully insured) is a serious loss to the Company, as she carried some 200,000 tons of coal annually for them.

One large claim in favour of ship-owning was made by Mr. Bradshaw at the Commercial Company's meeting. The Company are now, under war conditions, selling gas at 2s. 8d. —a rise of 4d.; and this to-day is the lowest price for gas in London proper. The gratifying temporary supremacy of the smallest of the three Companies in the matter of lowness of price of gas, the Chairman puts down to their possession of ships for coal transport, through which they have not been penalized to the same extent as the other Companies by the extraordinary rise in freights from the North. It is pretty certain that private ship owning will grow among gas companies who rely upon seaborne coal supplies. Where there cannot be, through the size of the concern, independent ownership, we see no reason why there should not be joint ownership.

Heat Exchanges in Carbonization.

The gas engineer knows well that in practice he cannot carbonize coal without the expenditure of a substantial quantity of fuel—coke equivalent to 10 per cent. of the weight of coal carbonized would generally be regarded as an ideal of economy in fuel consumption. But he knows also that the greater part, if not the whole, of the heat developed from the coke consumed in the retort-furnaces is frittered away through devious losses, which cannot be avoided, or even appreciably reduced, without incurring expenditure on plant which would be out of all proportion to the value of the coke saved. The heat of the fuel expended in carbonization is not restored in the products, the whole of which have not a greater heating value than the coal from which they were obtained. But, on the other hand, their total heating value approaches so nearly to that of the original coal that it has not yet been found possible to say definitely whether carbonization involves the evolution or absorption of heat by the material as it is converted from coal to coke, gas, tar, water, &c.

Professor John W. Cobb and Mr. Harold Hollings, in a

paper which is published in the current number of the "Journal of the Chemical Society," and of which a digest appears on another page of to day's "JOURNAL," speak of the "current" conception of coal distillation as a process in which heat is evolved. The evidence in favour of this conception is, they admit, inconclusive; and they therefore have set out afresh to investigate the question *ab initio*. The more important technical results hitherto obtained by them were all included in the lengthy report which they presented at the general meeting of the Institution of Gas Engineers last year. They have since extended their investigations on the same lines to materials akin to bituminous coal, with a view to throwing light on the effect from the thermal standpoint of the several elements—in the broad sense—of that widely varying product of Nature. It does not appear that they are yet in a position to set a value on the net thermal result of the carbonization process as applied to gas coal, or even to say definitely whether it is positive or negative.

They have, however, succeeded in showing that, at certain temperatures, reactions by which heat is evolved preponderate over reactions in which heat is absorbed, while at other temperatures the reverse is the case. Generally speaking, coals which approach in composition most nearly to cellulose and dehydrated cellulose are decomposed to a considerable extent at comparatively low temperatures, and thermal phenomena are marked at these temperatures. On the other hand, anthracite, being farthest removed from cellulose, is comparatively stable at low temperatures, and thermal phenomena begin to have relatively great importance only when high temperatures are reached. The results of the investigations deserve careful study, as it seems to us that they may well have a more direct bearing than Professor Cobb and Mr. Hollings have yet indicated on the determination of the best practical carbonizing conditions for different gas coals. On the other hand, since the observations are admittedly of little value for temperatures below 200° C. (= 392° Fahr.), it appears to us that they are less likely than the authors suggest to throw light on the liability of different coals to heat-up spontaneously in storage. We hope that the investigations may be pursued, as is indeed contemplated, because the results already obtained appear to suggest that deductions of great significance may be made from a rather more extended series of observations.

The Travancore Monazite Sands.

The agitation which, at the beginning of the war, was started by the Volker Lighting Corporation, Limited, and carried on by the "JOURNAL," and then taken up with the proper authorities by representative men of the gas industry, concerning the German control over not only the monazite sands of Brazil, but of the Travancore deposits of Southern India, has borne splendid fruit, as will be seen from a report which appears in another column. The Secretary of State for India deserves the heartiest thanks of the gas industry for what has been done, and for assuring to this country a right to enjoy a product of India without the supply profiting Germany *en route*. The statement to hand is not, in our opinion, altogether to the credit of those who formed the original Travancore Minerals Company. The concession was initially granted to the London Cosmopolitan Mining Company; and the right to transfer it was limited by the condition that the transfer was only to be made to a *bonâ fide* British concern. But, notwithstanding this stipulation, what really happened? In the subsequent forming of the Travancore Minerals Company, the Cosmopolitan Company and the General Electric Company were concerned; but the capital that was supposed to have been subscribed by the General Electric Company was, the report states, "held in trust for the Deutsche Gasglühlicht Gesellschaft—or Auer Company—of Berlin, and not on account of the General Electric Company."

A Supply Assured.

This did not conform with the condition attaching to the concession regarding a *bonâ fide* British concern—it appears, in fact, to be a direct evasion of it, and quite of a piece with German finesse in getting control of trade. It was known that the Berlin Auer Company had been receiving the output of the Travancore Company; but we were assured by a letter from the Travancore Minerals Company, which was published in our issue for Sept. 1 last (p. 521), that the Company was a British one, and that it had made a "contract for the whole of its output with the only firm in Europe capable of taking such an output." In the light of what now transpires, this letter is of interest in more ways than one. However, the Secretary of State for India has seen to it that in future the concession is so worked as to assure that the Company "will be ready at all times to sell monazite sand direct, and at a fair price, to *bonâ fide* British firms, without giving preference to large purchasers." The new conditions under which the Company will now be operated are fully set out on p. 283; and a guarantee that there will be compliance with them is given by the fact that the Secretary of State for India has power to nominate one Director, who is to be Chairman if so directed. The first Chairman and Director so nominated is Sir John Hewett; and he has already entered upon his duties. Subjoined to this statement is another announcing the formation of a new Company for working the Travancore monazite sands; and in this Messrs. Hopkin and Williams, Limited, is concerned—a firm of manufacturing chemists who have previously been engaged in the production of thorium nitrate. There is gratification in learning that henceforth this country will not be the dependents of Germany for the chief essential in mantle making; and we hope home gas undertakings and mantle dealers will now give, by full patronage, every encouragement to the mantle makers in this country.

Gas-Works and Munitions Manufacture.

In unity, strength; and in co-operative work increased production. At most of the gas company meetings so far held, the chairmen have been able to point to the fact that the works are making good contribution to the supply of the ingredients necessary for the manufacture of explosives; and that, at the larger works, shops and machine tools have been placed at the disposal of the Munitions Committee, and in cases the making of shells or parts of shells has been commenced. The mechanics are entering on the work with enthusiasm; and in some works members of the clerical, collecting, and sales staffs are willing learners of the way to handle tools, and are spending hours of their own time each week making themselves proficient for giving relief at the lathe, acting as handy men to the expert workman, or taking up any other task which constitutes a contribution to the strength of the country in the great work of securing victory. The industry too is doing a no small part in finding the funds which the war demands. In the domestic part of the history of the war, the gas industry ought to find a place.

Value of Coal Storage.

The Brentford Gas Company, as Mr. R. J. Neville Neville, M.P., showed at the meeting last Friday, has done extremely well in the past half year. In no small measure this is attributed to the favourable position of the Company in regard to coal and oil. The Board and their Engineer (Mr. Alex. A. Johnston) believe in carrying good stocks. The beginning of the war found them well provided; and at the end of last half year, they had some 60,000 tons in store, which is about double the quantity that used to be carried a few years ago. Of course, this means a large amount of money. In fact, the value of the coal and oil in stock at the end of June was £73,971, which means much in the financial situation. But, on the other hand, there is a comfortable feeling in having a large stock of raw material at hand; and, when colliery or other labour troubles come, or when freights are high, or other adverse circumstances interrupt the ordinary course of things, the board and engineer enjoy an equanimity while others unfortunately circumstanced are suffering from a load of anxiety, and praying for relief.

Gas Oil Prospects.

In his speech at the meeting of the Tottenham District Light, Heat, and Power Company on Saturday last, Sir Corbet Woodall alluded to this matter. He says there is a serious prospect of shortage in the supply of oil for gas-making purposes due to the Admiralty having commandeered many tank-steamers, and owing to the destructive work of German submarines and mines. There is comparatively little oil in the country; and a serious position is likely to arise unless the Admiralty find it possible to release some of the tank-steamers. The matter, Sir Corbet states, is at the present time receiving the careful consideration of the Board of Admiralty.

Coal Exports and Price Limitation.

No ill-effect has fallen upon this country through the work of the Coal Exports Committee, in controlling supplies to neutral countries. On the contrary, the country has largely benefited by being in a position to get the coal required for current use and for stocking purposes for next winter. We are sure the still tighter grip which, under the Order in Council promulgated last week, the Government are making upon the coal exported to our Allies, will not be to their disadvantage. The Order now permits export to British Possessions and Protectorates; but for coal destined for allied countries, as well as for neutral countries, licences must be obtained from the Coal Exports Regulation Committee. But it may be taken for granted the Committee will not veto any legitimate trade with, and supplies to, our Allies—in fact this point has been officially made plain to avoid misconception. Since the Coal Exports Committee have been at work, there has been a good supply of ships for the coast trade and for transporting coal to our Allies; and the reason is mentioned in the market reports of the "Iron and Coal Trades Review:" "Lately this branch of the market has been well supplied with boats at the northern ports, because vessels coming from the North of Europe were promptly fixed for the coast or French ports if a licence for Norway, Denmark, or Sweden could not be obtained." The present good supply of vessels is a condition that, compared with what obtained when London and the South of England very badly wanted coal from the North, gives colour to the suggestions in articles in our columns [see July 6, p. 12, and July 27, p. 176] that the unusual activity of ships a few months ago to and from Holland, Denmark, Norway, and Sweden indicated the flowing of coal supplies to Germany through those countries. Confirmation springs from all sides. Concerning the Price of Coal (Limitation) Act, we have this week reproduced the full text of the measure, showing the various insertions and amendments made.

The "Relatively Small Number" Win.

In our last reference to the South Suburban meter-rent scheme—on July 20 (p. 125)—it was stated that the Directors of the Company had announced, through the Secretary (Mr. Wilfrid Wastell) that they had determined to withdraw their objectionable circular, which in the South Suburban area was provoking a swelling agitation—not because of the fact that the doubling of the meter-rent charge made an enormous difference, but because of the proposal to produce a meter-rent economy for the West Kent and Bromley gas consumers, by a one hundred per cent. interference with the meter-rent condition which had existed in the South Suburban area for generations! Upon the withdrawal of the circular, the agitation subsided. Now Mr. Wastell has sent round another circular in which, by desire of the Directors, he conveys their "thanks to the great number of consumers who, by signing the agreement, have recognized the fairness of the proposed advance on the present charge for meter-rent." The circular adds: "A relatively small number of consumers have, however, objected; and the Directors do not now propose to make the change." From local channels of information, it is known that a number of those in the old South Suburban district who signed the circular without troubling about fairness or otherwise began to recognize the unfairness of it after their attention was directed to what the proposal actually meant. It is a pity, however, that a "great number" of benevolent gas consumers who saw the fairness of doubling their own meter-rent in order that the West Kent and Bromley consumers might have relief should be deprived by the Directors of the power of putting their good intentions into practice, and that the "relatively small number" of consumers who were callous to the fairness of the proposal and rebelled against it, should have been allowed to be the victors. The second paragraph of the circular is the best possible comment on the first one. The circular would not have raised so much as a smile had the words "great number of" been omitted from the first paragraph, and "relatively small" from the second one.

The Retrospective Clause.

In an editorial article on the Coal Prices (Regulation) Act, the "Iron and Coal Trades Review" says it fears that the retrospective clause "will not be very cordially received in coal-mining circles outside the House of Commons; for, if there was to be any change at all, what was really wanted to be just was a period of six months after the Act came into operation during which existing prices should hold good." We do not doubt for one moment that the clause has not been "cordially received" in coal-mining circles; we believe that the Act from its first to its last letter is not very cordially welcomed by coalowners, except the very few who are not out for making a large profit per ton through the exigent circumstances of war time. The singular thing about the passing of this measure has been the little public resistance there has been to it from the coalowners; and the "little" has been of a weakly nature. The fact speaks volumes. The Act is in effect an accusation against some, though not all, of the coalowners; and mistrust gave it birth. Its existence in these times is really worse in respect of what it attests than its actual operation. Our coal contemporary speaks of being "just." Of course, it is right that the Legislature should be just even to any colliery owners who may not have had much care to be just to their native land in the hours of extremity. But justice has, in our view, been abundantly served by the prescription of three months during which the contract prices above the 4s. excess over 1913-14 prices shall be preserved to the coalowner; a six months' period would be worse than useless to the purchaser with contracts at excessive prices. And it does not require a coalowner to see the reason why.

Profits on Gas Supply.

Though it was claimed by the Chairman of the Gas Committee, when moving the adoption of the minutes at last week's meeting of the Belfast Corporation, that it has always been the policy of the Committee to supply gas at the lowest possible rate, it would seem, from a summary accompanying the Committee's report, that this remark invites something in the shape of qualification. For the summary shows the allocation of profits during the forty years that have elapsed since the works were acquired by the Corporation. In round figures, of the net profits £980,000 has been spent in connection with the gas undertaking—that is to say, for the direct benefit of those who have provided the money. But at the same time, payments to the City Council have been made to the really respectable total of £393,000—including £187,000 for the general purposes fund in aid of the rates, and £146,000 for dividends and sinking funds in connection with the new City Hall. Among several Committees who have also shared in the good fortune of the gas undertaking, the Electric Committee are down for £40,000. The £393,000 averages about £10,000 a year over the forty years, as a return to the ratepayers; and whether or not it represents a policy which is the best and fairest in the interests of all concerned, it obviously shows that it cannot always, if ever, have been the policy of the Committee to supply gas at the lowest possible rate. As to the justice of the method of securing a more or less artificial lowering of the rates at the expense of the consumers of gas, the views expressed by councillors are as divergent as ever. One notices that in the course of a debate in the Stockport Town Council, a member remarked that Manchester got £50,000 a year from the gas undertaking in relief of the rates, and that "it would be a sorry day for Manchester if ever they stopped this." The gas consumers, at any rate, would probably find themselves possessed of sufficient fortitude to enable them to face the "catastrophe" without any flinching. Another councillor at Stockport urged that if the undertaking were worked on proper lines the surplus revenue received from year to year, instead of being applied to the reduction of the rates, should go to the purchase of any new plant required. It was, he said, an injustice to the consumers of gas that they should be saddled with such a continual increase of borrowed money; and he was glad to see that the Government had refused to allow the Committee to borrow further money for new plant. The Salford Gas Committee, on the other hand—as well as one of the members of the Stockport Town Council—urge that the installation of gas appliances is being seriously interfered with, as the Local Government Board have, for the present, prohibited the borrowing of any further money for such purposes.

Examinations and the War.

An article which is of the greatest possible importance to large numbers of young men who, without thought for themselves or the manner in which their action might influence their future careers, came forward at their country's call, appears in the current number of "Engineering." It is a well-written and a well-

reasoned plea that, "after a man has played his part in the greatest tragedy the world has ever seen in its thousands of years of toil and tumult," he shall not find his future career menaced through having done so. It is pointed out by the writer that great numbers of the young men holding commissions in the army were last year preparing for examinations of various kinds, and that few will again be able to take up the threads of their studies when peace is proclaimed—first and foremost because the men will be at any rate a couple of years older than when they broke them off, but also because "they will have been face to face with actualities of most serious import, and will never again be able to resume the docile and attentive attitude which befits the student." Still, in many branches of work degrees or diplomas are, of course, almost a *sine qua non*, if a man is to get to the top; and it is this reflection which leads our contemporary to earnestly express the hope that, before peace is declared, "the academic and professional bodies of this country will come to some definite decision as to what is to be their attitude to the young men who have interrupted their careers at the call of the country, and are faced with the possibility of them being irretrievably broken." There will be general agreement with the view that it would be an outrageous thing if in the future the prizes of life were allotted to those who had stayed at home, while the men who had risked their lives were made to suffer from a permanent handicap from which they could never escape. The author of the article says that what the Councils of the Engineering Institutions have now to consider is how far their examinations can be temporarily relaxed so as to do justice both to the candidates and the public; and the suggestion made by the writer is that the kind of knowledge which can be fairly expected at examinations of men who have broken off their studies for the war is that which the ordinary candidate retains three years after obtaining his diploma. The proposal is merely put forward tentatively; but a compromise on these or some other lines will no doubt be arrived at.

An Ancient Proposal Revived.

The "Building News," in its "Currente Calamo" columns, comments upon the position of the Gaslight and Coke Company, in respect of their present dividends and the market prices of their stocks. But it does not say anything about these conditions being of a temporary nature, owing to the war and the operation of the sliding-scale. Our contemporary evidently thinks things are in a bad way with the Gaslight and Coke Company working under the modern system; for it makes the grey-with-age suggestion: "Why not pipe-line gas to London from the pit mouth, and sell a lower grade gas for heating at (say) 1s. per 1000 cubic feet, and leave lighting to the electric undertakings. We should all use it then, and London would be smokeless." By the time that the pipe-lines were constructed, with the huge carbonizing plants erected at the pits' mouths, and compressors for putting the gas under pressure, when the waste of gas was taken into account, and the distribution expenses on the coke and the other secondary products which are required in every locality were paid, it would probably be found that the same thing applies to-day that has applied for decades since the proposal had original birth—that there would be no advantage in the new system for consumers over and above what prevails in normal times now. Besides which there would be a great destruction of capital in abandoning existing works. The "Building News" is evidently not aware that there are towns in which in normal times gas is sold round about 1s. per 1000 cubic feet. But coal, labour, transport, and the heavy capital outlay of a past day, conspire to prevent, despite new economic conditions in manufacture, a more rapid approach to this figure by other towns. Still, with gas at ordinary prices, more than 3 million gas-cookers are in use in the United Kingdom; and gas heating is progressing by leaps and bounds.

Production of Gas in Germany in 1914.—A circular-letter of inquiry issued by the Central Gas Publicity Bureau in Berlin to gas-works in Germany has been answered by 733 works, which have in previous years replied to a similar inquiry as to their production of gas in the past year. In some cases the figures refer to the calendar year, and in others to twelve months ending March 31. Consequently those for the last year cover in some cases a longer period of war conditions than in others. The total production of the 733 works in 1914 (or 1914-15) was 2,208,196,500 cubic metres (about 77,982,460,000 cubic feet), which is a decrease of 3·7 per cent. on the production of the same works in the previous year. On the other hand, that year showed an increase of 5·3 per cent. over 1912.

CITY AND GUILDS EXAMINATIONS.

The Prize Winners for 1915.

In the "Journal" for the 6th ult. (p. 18), the list was given of the candidates who passed the last examinations in "Gas Engineering" and "Gas Supply" in the Department of Technology at the City and Guilds of London Institute; and on another page of to-day's issue will be found a similar list in the newly inaugurated examinations in "Gas-Fitting." We have now received a list of the prize winners in the subjects named, as well as in those of "Coal-Tar Distillation" and "Coal-Tar Colouring Matters." The following are the names of the successful ones; the centres at which they were examined being put in parentheses—no place of residence being given.

Gas Engineering.

Brown, Herbert H. (Southampton): First prize, Grade I., £2 and bronze medal.

Clarke, Claude H. (Regent Street Polytechnic, London): Third prize (equal), Grade I., bronze medal.

Hunter, F. S. (Liverpool Municipal Technical School): Third prize (equal), Grade I., bronze medal.

Jones, Edgar (Derby): Second prize, Grade I., £1 10s. and bronze medal.

Thomas, Leonard H. (Birmingham Municipal Technical School): First prize, Final, £3 and silver medal.

Gas Supply.

Cæsar, J. E. V. (Canterbury): First prize, Grade I., £2 and bronze medal.

Haynes, J. T. (Liverpool Municipal Technical School): First prize, Final, £3 and silver medal.

Hunter, F. S. (Liverpool Municipal Technical School): Third prize, Grade I., bronze medal.

Weekes, R. C. (Devonport): Second prize, Grade I., £1 10s. and bronze medal.

Gas-Fitting.

Bellamy, F. B. (London County Council): Second prize, Grade II., bronze medal.

Walton, John (Birmingham Municipal Technical School): First prize, Final, silver medal.

Wardle, Thos. J. (Grimsby): First prize, Grade II., bronze medal.

Coal-Tar Distillation.

Bradley, G. W. J. (Salford Royal Technical Institute): Second prize, Grade I., £1 and bronze medal.

Freeborn, Albert (East Ham Technical College): First prize, Final, £2 and silver medal.

Hunter, Harold (East Ham Technical College): First prize, Grade I., £1 10s. and bronze medal.

Young, Roland F. (East Ham Technical College): Third prize, Grade I., bronze medal.

Coal-Tar Colouring Matters.

Payman, W. (Manchester Municipal School of Technology): Third prize, Grade I., bronze medal.

Perkins, Maurice (Bradford Technical College): Second prize, Grade I., £1 and bronze medal.

Rosenbaum, J. L. (Leeds University): First prize, Grade I., £1 10s. and bronze medal.

New Synthetic Coal Gas.

The "American Gas Institute News" publishes the following, which appeared in the "Scientific American Supplement": A new lighting gas has been prepared which is claimed to be much less toxic than water gas or air gas, and yet possessing a calorific value approximating that of coal gas, and, therefore, far greater than that of water gas or air gas. The new gas may be obtained from coal, coke, or from water gas. When coal is used, this is first mixed with lime, and distilled at 900° to 950° C. A current of steam is then introduced over the coke so produced, maintained at 900° to 1000° C. The total yield of gas freed from carbon dioxide is about 64,000 cubic feet from 1 ton (2000 lbs.) of coal. It contains 70 to 78 per cent. of hydrogen, 15 to 20 per cent. of methane, and 5 to 10 per cent. of carbon monoxide. By regulating the reaction, the amount of carbon monoxide may be reduced to practically *nil*. The amount of ammonia recovered as a bye-product is more than four times that obtained from the same coal by the ordinary methods of distillation; and the volume of lighting gas is eight to ten times greater. The whole of the nitrogen present in the coal is converted into ammonia.

PERSONAL.

Mr. G. M. Gill, the Assistant-Engineer of the Commercial Gas Company, has been appointed by the Metropolitan Munitions Committee to be District Manager of the Stepney and Poplar district.

Mr. W. G. Head, the Superintendent of Mains of the South Metropolitan Gas Company, has been appointed by the Metropolitan Munitions Committee to be District Manager for the South-East London district.

Mr. H. M. Thornton, the Managing-Director of the Richmond Gas Stove and Meter Company, Limited, of London and Warrington, has been appointed a co-opted member of the Manchester Air-Pollution Advisory Board—a Sub-Committee of the Sanitary Committee of the Corporation.

On the 5th inst., to mark the severance of Mr. Hugh Uttley's connection with the Rossendale Union Gas Company (Bacup) after 26 years' service in the capacity of meter inspector, he was presented by his colleagues and office staff with his own and their photos arranged in a handsome frame.

After interviewing four candidates, the Ellesmere Port Urban District Council have conferred upon Mr. William A. Nicholas the position of Manager of the gas-works which they are acquiring from the Shropshire Union Railways and Canal Company. Mr. Nicholas is at present in the service of the Company.

Mr. W. G. Wilshaw has recently been appointed Chairman of the Romford Gas and Coke Company, Limited, in succession to the late Mr. Joseph Smith, J.P. Mr. Wilshaw is Chairman and Managing-Director of Messrs. Fletcher, Son, and Fearnall, Limited, one of the largest dry dock proprietors on the Thames. He has been closely associated with the gas industry for nearly fifty years; and for the last twenty-five years has been a member of the Board of the Romford Gas Company.

Among the applicants for the position of Chief Engineer of the South Metropolitan Gas Company, advertised in the "Journal" last April, was Mr. W. B. Leech, the Engineer and Manager of the Leeds Corporation Gas Department. We learn, however, that Mr. Leech has now withdrawn his application, as he felt it was unfair to his Committee to allow the matter to drift on any longer, taking into consideration the amount of re-organization and re-construction work he has on hand at present in connection with the Leeds Gas Department.

It will be with mingled feelings of gratification and regret that members of the gas industry will learn that Dr. W. B. Davidson, of Birmingham, has accepted the offer of a new and very tempting position, as Chemical Engineer to British Dyes, Limited. In his new sphere his extensive gas engineering experience will, of course, be of great value to him; and it may be confidently predicted that he will continue to keep in as close touch as practicable with the industry for which he has done so much good work. Dr. Davidson, who is arranging to leave Birmingham in about a fortnight's time, will be much missed by the Corporation Gas Department there, in the service of which he has spent a considerable number of years—first as Chief Chemist, and since the beginning of 1912 as Engineer of the Nechells Gas-Works.

The invitation for applications for the position of Engineer and Manager to the Romford Gas and Coke Company, Limited, which appears in our advertisement pages to-day, is necessitated by the retirement, primarily through ill-health, of Mr. W. D. Child, who has held the position for nearly forty years. On completion of thirty years' service, in September, 1906, he was presented, as a mark of esteem, with a gold watch, subscribed for by the whole of the staff and employees; and in making the presentation, Mr. J. W. Harvey (the Secretary) remarked that Mr. Child had been a great friend to everyone in the employment of the Company. On leaving school, Mr. Child was articled to his father, head of the firm of Messrs. G. E. Child and Son, who for many years had been established as engineers and contractors at Southwold, giving special attention to gas-works plant. Subsequently he enlarged his experience of the design and manufacture of apparatus, first at Newport (Mon.) and then in London. Since he has been at Romford, the make has risen from 15 million cubic feet per annum to more than ten times this quantity; while the price of 5s. 5d. per 1000 feet has been nearly halved. Mr. Child was elected a member of the British Association of Gas Managers (as the Institution of Gas Engineers then was) in 1874; and he was one of the earliest members of the Southern District Association, of which body he was President in 1887. In 1898, he occupied the Presidential Chair of the Eastern Counties Association. As a mason, he is well known; having been W.M. of the Liberty of Havering Lodge in 1894, and of the Evening Star Lodge in 1901.

In the "Journal" for Dec. 1 last, mention was made of a letter by Mr. Douglas H. Helps, in which the writer stated that the Reading Gas Company had then about fifty of their workmen and staff with the forces. It is gratifying to learn that this number has since been doubled; there being now about a hundred of the Company's employees serving. In the same letter, Mr. Helps wrote that his Junior Assistant, Lieutenant H. M. Brown, was with the Leicestershire Regiment at the front. Some two months ago, Lieutenant Brown was invalided home in order to undergo an operation. This was successfully performed; and he is now serving again.

OBITUARY.

The death is announced of Mr. William Wilson, the Secretary of the Portadown and Banbridge Joint Water Board. He held the positions of Town Clerk and Surveyor of Portadown.

The "Journal für Gasbeleuchtung" of July 24 reports that the death occurred at Dresden on the 7th ult. of Herr E. R. Storl, who had been Manager of the gas and water works of Riesa from 1873 to 1908. In the latter year he retired from work.

Dr. James A. Bennett, the Treasurer of the New York Consolidated Gas Company, died on the 11th ult., in his seventy-third year. In 1864, Mr. Bennett entered the employ of the Manhattan Gaslight Company; and in 1884, when the New York Gas Companies amalgamated, he became manager of a branch office. He was made Secretary of the Consolidated Gas Company in 1901, and Treasurer two years later. He was interested in a number of trading concerns—occupying, among other offices, that of Treasurer of the Astoria Light, Heat, and Power Company.

A well-known consulting electrical engineer has passed away by the death of Mr. Robert Hammond, who died last Thursday at Hampstead, after a short illness. He had been connected with the electric light industry in this country since quite the early days; and he was responsible for a large number of undertakings for the supply of current, and in connection with traction, in the United Kingdom and abroad. He had, of course, a large practice as a parliamentary witness, and in rating appeals and arbitrations. He acted for the London County Council in the matter of their Bulk-Supply Bill of a few years ago, and also as one of the advisers of the Post Office in the matter of the acquisition of the telephones. Mr. Hammond, who was a member of the Institutions of Civil, Electrical, and Mechanical Engineers, was born in 1850; and it was in 1878 that he took up electrical engineering in connection with a business established by him in Middlesbrough and London.

The death occurred last Wednesday, at Nottingham, of Mr. Stephen Moore, who had been formerly for many years Manager of the Corporation water undertaking, and was one of the city's oldest and most esteemed public officials. Originally he was associated with the Water Company, whose rights were acquired by the Municipality in 1879, following the purchase of the gas-works in 1874. As Manager of the Company, to which position he ultimately attained, he was responsible for much valuable service. Mr. Moore terminated his active participation in official work in 1908. One of the principal matters in which he was concerned during his long official career was naturally the transfer of the Company's interests to the Corporation. The late Sir S. G. Johnson, the Town Clerk, had been primarily responsible for the policy which led to the purchase of the gas-works; and in the settlement with the Water Company substantially the same plan was followed in regard to financial details—the purchase being upon the basis of the conversion of the Company's stock into annuities bearing interest at 6½ per cent. the first year, 6¾ per cent. the second year, and 7 per cent. afterwards. The Company were paid a bonus of £20,000. Mr. Moore's services were continued with marked advantage to the city; his official work covering the period of its greatest commercial expansion. The deceased was 77 years of age.

TRAVANCORE MONAZITE SAND DEPOSITS.

Conditions for the Future Working of the Concession.

It will be remembered that, at the time of the outbreak of war, concern was felt in the gas industry on the subject of the maintenance of an adequate supply of incandescent gas-mantles. This alarm has since proved to be groundless—in the first place owing to the fortunate prevision of the Directors of the South Metropolitan Gas Company, in putting in their stores a considerable supply of the essential thorium nitrate. The industry was, however, awakened to the critical position in which it stood, in being so largely dependent upon Germany for the supply of thorium; and attention was drawn to the fact that large deposits in the Travancore State of Southern India were controlled by the Travancore Minerals Company, Limited, the whole of whose output was finding its way, under contract, to a large consumer in Berlin. The steps that have since been taken to ensure supplies of monazite sand from these Indian deposits finding their way to this country are outlined by the following remarks, which were made by Sir John Prescott Hewett, G.C.S.I., C.I.E. (who has been appointed by the Secretary of State for India to be a Director and Chairman of the Travancore Minerals Company), on his taking his seat at the Board meeting last month.

The lease for mining certain deposits of monazite sand in the Travancore State in Southern India was, with the approval of the Government of India and the Secretary of State for India, granted by the Travancore Durbar in May, 1911, to the London Cosmopolitan Mining Company, Limited. The right to transfer this concession was limited by the condition that the transfer could only be made to a *bonâ fide* British concern. In December, 1911, an agreement was entered into between the London Cosmopolitan Mining Company and the General Electric Company to form a British Company to take over and work the lease. The terms of the transfer were that the Cosmopolitan Company received £10,000 in cash and £10,000 in ordinary shares. The

General Electric Company subscribed £20,000 in preference shares to the Travancore Minerals Company, and received, by way of commission, £10,000 in ordinary shares in the Travancore Company. Inquiries instituted after the war began disclosed the fact that the whole of the preference shares and 11,000 of the ordinary shares (1000 of the holding of the Cosmopolitan Company having been transferred since 1911) were held in trust for the Deutsche Gasgluhlicht Gesellschaft—or Auer Company—of Berlin, and not on account of the General Electric Company.

After a full consideration of the circumstances, the Secretary of State for India determined that certain conditions, of which the following are the most important, must be enforced in regard to the future working of the concession by the Travancore Minerals Company.

(1) Preference shares in future to carry no vote.
(2) Ordinary shares to be divided into two classes; the 11,000 shares held for the Auer Company being classed as "A," and the remainder as "B" shares. "A" shares to be entitled to one vote only per two shares.
(3) No ordinary shares to be transferred to persons other than natural-born British subjects.
(4) All Directors of the Company to be British subjects, and the majority to be British-born subjects. The Secretary of State for India to have the power to nominate one Director, who shall be the Chairman if the Secretary of State so direct.
(5) The Directorate to consist in future of seven persons—two elected by holders of "A" shares, and the rest (apart from the Secretary of State's nominee) elected by holders of "B" shares.
(6) The Company to give a formal undertaking that it will be ready at all times to sell monazite sand direct, and at a fair price, to *bonâ fide* British firms, without giving preference to large purchasers.

These conditions were duly accepted at the meeting of the shareholders held on June 16, and confirmed by the subsequent meeting held on July 2. And, in pursuance of the fourth of them, I am present at this meeting as the Director and Chairman of the Company nominated by the Secretary of State for India. The business is to constitute the Board by electing six Directors. Of these, two will be elected by the holders of the ordinary "A" shares, and four by the holders of the ordinary "B" shares.

After the Board has been constituted, their first duty will be to give effect to one of the conditions laid down by the Secretary of State, which is of the greatest public importance. The Company have in previous years transferred the whole of their output to a German Company, called the "Germania," under an agreement which has now terminated. The following undertaking has been accepted by the shareholders in respect of future transactions:—

> The Company will be ready at all times to sell monazite sand direct, and at a fair price, to any *bonâ fide* British firm that may desire to purchase the material in reasonable quantities for the purpose of manufacture. The Company further undertake that they will give no preference in the matter of price to any purchaser or purchasers of very large quantities, but that the price per ton for all purchases of lots of 10 tons and upwards shall be the same, free at the mine. The Company clearly understand that if, in the opinion of the Secretary of State for India, the control of the Company has passed at any time out of British hands, or if, in the Secretary of State's opinion, there is grave danger at any time of British control being lost or jeopardized, or in the event of any breach of this undertaking, power is reserved to cancel the concession.
>
> The Company hereby further undertake that they will at all times hold all the books of the Company open to the inspection of the Secretary of State for India at the registered offices of the Company.

This undertaking will be brought into effect by its being signed and sealed at a meeting of the Board to be held directly after the meeting of the shareholders has completed its business.

The "Chemical Trade Journal" of the 7th inst. reports that a new Company has been floated to work monazite in Travancore State. It is started by Messrs. Hopkin and Williams, Limited, of London. The Secretary of State sanctioned last month the issue to them by the Travancore Government of a lease for twenty years of a plot of 150 acres on a royalty of £3000 a year. An efficient scientific staff has now been organized to work the concern, which comprises Mr. Edmund White, B.Sc., F.I.C., and Mr. E. Malillamoney, B.Sc., A.R.C.S., State Geologist, who relinquishes his appointment with the Travancore Government, and Mr. Ralph Taylor, late of Chisholm Ewart and Co., of Colachel, joins as General Manager. It is hoped to start operations in October next. This is the second venture to work monazite in Travancore—the first one being what is now known as the Travancore Minerals Company.

The American Gas Institute have been awarded the "Grand Prize" for their collective gas exhibit at San Francisco; and Mr. E. G. Cowdery and Mr. E. C. Jones have received Medals of Honour as collaborators in its preparation.

FRENCH GAS PROFESSIONAL SYNDICATE.

Last Year's Work.

It will doubtless be in the recollection of "Journal" readers that there is in operation in France an organization, consisting of gas engineers and managers, entitled the Syndicat Professionnel de l'Industrie du Gaz. It deals with the business side of the industry—leaving manufacturing and constructional matters to be taken up by the Société Technique. It is a kind of French Commercial Gas Association, but with more extended powers than our own Association. There are 147 members, representing gas and electricity works supplying respectively 13,812,499 and 3,763,465 inhabitants. The finances are provided by contributions at the rate of 2 fr. 25 c. per 1000 inhabitants in the case of gas, and 2 fr. 50 c. per 1000 in that of electricity. In the year ended Dec. 31, 1914, the revenue amounted to 40,333 frs. (£1613), and the expenditure to 39,822 frs. (£1593); showing a balance, in round figures, of 500 frs. (£20).

These particulars are obtained from the recently issued report of the annual general meeting of contributors (held during April last under the presidency of M. Henri Marquisan, the General Manager of the Bordeaux Lighting Company), a copy of which has been courteously forwarded to us. It contains a report on the work of the Syndicate in the past year by the Chambre Syndicale, the President of which is M. René Masse, the General Manager of the Société d'Eclairage, Chauffage, et Force Motrice (the Company supplying gas in the suburbs of Paris), whose important work on gas manufacture was reviewed in the "Journal" not long ago. This report goes in great detail into all the matters which engaged attention last year, particularly those relating to keeping up the supply of coal to the gas-works in the area affected by the war and the disposal of the residuals. Acknowledgment is made for much information on these matters obtained from the "Journal." Labour questions (pensions and retiring allowances), legal cases, and the propaganda work of the Chamber are touched upon; the last-named being somewhat hampered by the war. The report occupies more than 36 large pages; and opportunity may be taken to deal more fully with its contents on a future occasion.

M. Marquisan went out of office at the annual meeting, and was succeeded by M. Macaux, Manager of the Compagnie Nouvelle du Gaz de Saint-Etienne (Loire). The late M. Delahaye was the General Secretary of the Syndicate, and testimony is duly borne in the report to the value of his work and to his excellent personal qualities. In order to prevent interruption in the secretarial work, the President of the Société Technique (M. Rouland) authorized their Secretary (M. Bouron) to undertake the duties pending the appointment of a successor to M. Delahaye.

ELECTRICITY SUPPLY MEMORANDA.

Preference under the Rateable Value System.

The "Point-Five" men should really decide definitely whether, under the rateable value system of charging, the fixed sum levied is spread over the whole consumption, or only over the units consumed for lighting purposes, because then the ground would be clear for settling the question as to the system conferring preferential charges for particular services. Mr. Thomas Roles, the Chief Electrical Engineer of Bradford, publicly announces that he has decided the point to his own satisfaction. But in Bradford the electricity supply and the gas supply are under Corporation management; and there is not much chance of electricity consumers in the borough knowing anything about sections 19 and 20 of the Electric Lighting Act, 1882, which prohibit the electricity suppliers from doing business for "corresponding" purposes (which term is defined by the Long Eaton case) at rates which give an undue preference. Mr. Roles is one of the two gentlemen who read a paper on the Point-Five system at the last meeting of the Incorporated Municipal Electrical Association, and got very badly handled in consequence [see "Memoranda," June 29, p. 745]. He has now published his statement of defence, and has not made a very good job of it. In this he says: "In Bradford and Sunderland, the fixed charge arrived at on the rateable value basis has been so calculated that, *plus* a charge of ½d. per unit for current used for lighting purposes as registered by meter, it is on the average equal to the cost of lighting a house moderately well throughout at between 3½d. and 4d. per unit." He proceeds to say that "it follows therefore that, on the average, all units sold for heating and cooking purposes, and any increase of illumination above the ordinary, are obtained by the consumer at a flat-rate of ½d. per unit." This is a very positive statement; and we should like Mr. Roles to tell us, upon that, and with the Long Eaton judgment before him, whether he is prepared to supply units for heating and cooking at a flat-rate of ½d. per unit *without* stipulating that the consumer shall use electricity for lighting, and for it pay a fixed percentage on the rateable value of his house *plus* ½d. per unit. If he is not prepared to do this, then he is giving preferential treatment to the cooking and heating consumers at ½d. per unit whose lighting is paid for at a fixed charge on the rateable value *plus* ½d. per unit. The use

of current for cooking and heating is contingent on the payment for lighting under the rateable value system. On the other hand, if Mr. Roles spreads the fixed charge over the whole consumption, as in the case of one of his consumers who gets all his units at an average price under the rateable value system of 0·73d. per unit—units for lighting, for heating, and for cooking—then this man is getting preferential treatment for lighting over the lighting consumer who pays (say) an average of 4d. per unit, and who may be just as good a consumer for lighting purposes. Regarding this particular consumer, let it be said that all consumers on the rateable value system have not the capacity for electricity use that he has. The system is a way of giving preference; and this is easily demonstrable. As we showed when commenting on his paper, Mr. Roles has not himself been very successful in arranging a fixed payment on the rateable value *plus* ½d. per unit system, so that it returns to the undertaking the equivalent for lighting of the previous revenue from lighting on the flat-rate charge. Many of the consumers have largely increased their consumption and for a much smaller payment—the undertaking being thereby deprived of revenue, while turning out more units for the money received, and will have to turn out considerably more still in many cases before recouping the former revenue. Extra current cannot be generated without cost—in the way of fuel, oil, depreciation, and so forth. Concerning water heating, Mr. Roles says there are a number of electric water-heating installations in use which are giving satisfaction, and are working economically. Would he mind saying where these are to be seen, and whether it would be possible to make consumption, time, and capacity tests for comparison with data from modern gas-heated water appliances?

Coal Contracts and Electrical Undertakings.

When the gas and electricity supply industries had the joint conference some time ago on the coal question, certain electrical engineers stated that they had no complaint to make regarding their coal deliveries. They were, of course, speaking of their individual experiences, and not for the country generally. Many electrical undertakings had been almost in a state of exhaustion, and close to collapse, owing to the condition of their fuel supplies, and not a few were mightily glad a good fuel for steam-boilers could be obtained from the local gas-works. To those electrical undertakings that were almost *in extremis* for fuel, the engineers who were well-favoured in this respect did not do any good service by brightening the aspect of conditions by relating their own individual experiences, which were of a contrary order. The testimony of Mr. A. E. Cramb, the Borough Electrical Engineer of Croydon, may be given as representing for a suburban concern the contrary condition of things. He says that a contract for sufficient coal to carry through to the end of the financial year, at 16s. 3d. per ton, was suspended in the autumn, due to restrictions of shipping in Scotland; and it was therefore necessary to purchase supplies when and where available at ever-increasing prices. Note should be made of this by our gas-engineering friends who think the southern gas undertakings were blamable for the rise in the price of coal in the early part of the year owing to their inability to get sufficient supplies to satisfy their needs other than in the open market. Mr. Cramb proceeds to remark that gener ally, contracts for Midland coals were executed so that Croydon suffered relatively more than many electrical undertakings during this period from increased prices of coal. In 1913-14, 21,565 tons of coal were used, at an average price of 17s. 11d. per ton. In 1914-15, 21,078 tons were used, at an average price of 17s. 8d. per ton. Now he estimates the average price will be more than 25s. per ton—possibly 26s. a ton for the present year. Even the former figure means an increased burden on the undertaking of approximately £9000 to £10,000. Put the electrical statements at the conference against this one, and against the appointment of the Coal Exports Regulation Committee and the passing of the Coal Prices Regulation Act, and then ask how far the statements represented general experience.

The Price and the Man.

There has frequently been complaint in the electrical papers regarding the parsimony of municipal electricity departments in the payment of members of their staffs. The practice of under-estimating the value of services, and under-paying for them, appears to stubbornly survive, and it will offer a lot of resistance before it resigns itself to final burial. We are reminded of the periodical complaint by an assessment made in "Installation Topics" of the "Electrical Times" of the salary value of a man connected with the outside work of an electrical undertaking, whose services are said to be of a highly valuable order. As mentioned in the "Memoranda" last week, the writer of "Installation Topics" attacked the charges made by electrical contractors for wiring work, which charges, he asserted, did much to damage the progress of the electricity supply business. A correspondent, when referring to this attack, speaks of his experience when a business developer for a municipal electricity undertaking. He found that the local contractors were meritoriously trying to get wiring business independently of the electricity undertaking; but they unmeritoriously valued what they did at a high figure. He started playing off one contractor against another, and so secured what he considered were reasonable prices for consumers. At length, the contractors came to the wise conclusion that this man was doing good work for both them and his department. He urges the appointment of a wide-awake canvasser who can keep his chief supplied with all sorts of information as to what is going on in the district, which may be of value to him and the undertaking. The man in view seems to be one who shall not only directly canvas for business, but act as a sort of spy in the area, and be well up in the rules of German espionage. "There are often," says this correspondent, "influences at work in opposition to electrical development that can be discovered and overcome through the efforts of a competent outside representative, whose remuneration should not depend solely upon the number of applications brought in. A corporation official who has the faculty of inspiring confidence among consumers and likely users, and has the supreme gift of tact in dealing with complaints, and settling differences between rival contractors or between individual contractors and the supply department, is a valuable asset, and his services cannot fairly be paid for on a commission basis only." Such a highly accomplished paragon, the correspondent states, there should be no difficulty in securing at a salary of £3 a week or thereabouts, which suggests that brains and ability are very inequitably assessed in the electrical industry, or there is such an unfortunate burdensome supply in the market that, under the operation of the law of supply and demand, a higher rate of pay cannot be commanded.

Value of Personal Contact.

Bearing on much the same subject is another note in the same issue of our contemporary. It asserts that, in the electrical industry, sufficient is not made of the value of pressure contact with consumers. Little encouragement is given to consumers to pay visits to the electricity offices to pay their accounts, and, while doing so, to make inspection of the show-rooms. Little is done to create a friendly feeling between suppliers and consumers. Insufficient too is made of personal touch through canvassers. Altogether things seem in a bad way in the matter of developing methods. It is acknowledged that gas is a keen competitor; and that satisfactory progress cannot be made unless there is ceaseless activity. This acknowledgment is something, because at one time the electricity industry was accustomed to speak of the gas industry in much the same way as Germany spoke of the British Fleet. The gas industry was long since condemned by certain feeble-brained members of the electrical industry to speedy dissolution, and final disappearance from the face of the earth. But here it still is; and, like the British Fleet, it is stronger than ever. The note in our contemporary was inspired by a paragraph in the annual report of Mr. R. Ayton, the Borough Electrical Engineer of Winchester, in which he says:

> Heating, I am pleased to say, becomes increasingly popular, and is proving a most remunerative source of supply; cooking has not made during the year the progress I anticipated—this, however, I consider is accounted for by the war, as it has been found that consumers are unwilling to make a radical change of this nature under present circumstances. I feel sure, however, that a greatly increased output in this direction could be obtained by holding a demonstration, such as was suggested about this time last year, in order to bring to the notice of the general public more prominently the various uses to which electricity can be put, or alternatively, by opening a showroom in some central part of the city where the latest appliances could be exhibited and demonstrated. To a large extent the department is handicapped in this direction, as owing to the offices being rather out of the way I find that it is becoming more the rule for consumers to remit their accounts by post, with the result that we lose the advantage of a personal visit which can hardly be made up for by the circulation of publicity literature.

Mr. Ayton is wise. It would be a good thing for the gas industry if there was a little more personal contact; but in some areas, it is a big business to keep in close personal touch with the enormous number of consumers.

Profits on Half-Watts.

The makers of the "Mazda" "half-watt" lamps evidently do not want contractors to devote much attention to the sale of the small sizes of these lamps; for they make this announcement in their advertisements: "Do you know that your profit on the sale of *one* 1500-watt Mazda half-watt lamp is equal to your profit on *twelve* 100-watt lamps, or *seventeen* 20-watt lamps, or *twenty-three* 10-watt lamps? Think what this means—one transaction instead of many; greater satisfaction to your customer; more business; more profit for *him* too."

A Gas Manager Appointed Professor at a Dutch University.—The Vice-Director of the Amsterdam Gas-Works, and Manager of the new southern gas-works, Heer C. K. Visser, has just been appointed Professor at the Delft Technical University. The new professor, who is only 37 years old, entered the gas industry about the year 1905, when he was appointed Constructional Engineer for the erection of the new Trekvliet Gas-Works of the Hague Corporation. In 1907, when the new works came into operation he was appointed Vice-Director of the Hague Gas-Works and Manager of the new works. Ten months afterwards, he was appointed Vice-Director in Amsterdam, where he supervised the construction of the new southern gas-works, and afterwards of the smaller northern works. The new professor will deal with the construction of water and sewage works, and with the design and calculations of constructional work.

RECOVERY OF WASTE HEAT ON GAS-WORKS.

Test at a German Gas-Works.

MANAGERS of gas-works have from time to time been upbraided by engineers engaged in other industrial undertakings for allowing large quantities of heat, which might be utilized, to go to waste in various directions on their works. The economists sometimes suggest that they would be prepared to pay a good price for the waste flue gases if the gas-works would undertake to discharge these gases into an insulated conduit leading to an adjacent site, instead of up existing chimney stacks. On this site they would utilize the sensible heat of the flue gases for some industrial purpose which is seldom clearly defined. If the gas manager shows a disposition to discuss such a scheme seriously with his critic, the latter generally withdraws his suggestions with the admission that he had not realized that, so far as the conditions of working allowed, gas-works seemed already to be recovering most of the waste heat which could be utilized with any prospect of economical advantage. Nevertheless, in these days of dear coal it behoves the gas manager to investigate any possible sources of economy of fuel on his works; and on this account some figures taken from a study of the question by Herr Ernst Schmied, the Manager of the Corporation Gas and Water Works of Aschaffenburg, may be of interest.

Herr Schmied's communication, which was presented at the twenty-ninth general meeting of the Bavarian Association of Gas and Water Engineers, has been published in the "Journal für Gasbeleuchtung" of the 12th of June. The author states that waste-heat recovery on the lines discussed by him is being tried experimentally at the Aschaffenburg Gas-Works with the special object of providing high-pressure steam. The gas-works have an annual make of about 70 million cubic feet of gas, which is obtained chiefly from three settings, each of eight vertical retorts, having a productive capacity of nearly 100,000 cubic feet per diem. But there are also three settings, each of eight horizontal carbonizing ovens of the Munich type, which are only used when the demand for gas becomes greater. All the settings discharge their spent gases into one chimney, which is 40 inches in diameter inside, and nearly 100 feet high. A Cornish boiler, with 215 square feet of heating surface, and a supplementary boiler with 65 square feet, both also discharge their flue gases into the same chimney. The two boilers barely suffice to meet requirements in the depth of winter; and as the small one is old, the question of an extension of the boiler installation has become imperative. The steam requirements of the works for power purposes, vertical retorts, heating buildings, offices, and gasholders have been computed to be equivalent to: On 200 days, about 220,000 B.Th.U. per hour; on about 140 days, 780,000 B.Th.U. per hour; and on about 30 days of hard frost 1,560,000 B.Th.U. per hour. The fuel hitherto used has been about 140 tons of coke breeze, 190 tons of coke, and 130 tons of coal, valued at £348 10s., which, with boilermen's wages amounting to £75, gives a total cost of £423 10s. per annum.

POSSIBLE SOURCES OF HEAT RECOVERY.

The possible sources of heat recovery on the works were reckoned by the Carlsruhe Instructional and Experimental Works to be as follows.

Sensible Heat of the Coke.—The specific heat of coke is not exactly known, but may be taken at a mean value of 0·38 between ordinary temperatures and 1800° Fahr. Hence 1 lb. of coke in cooling from 1800° to ordinary temperatures should yield something like 1750 × 0·38 = 665 B.Th.U., if losses are disregarded. This would correspond with an economy of about 5 per cent. in the fuel consumed for heating the retorts if the producer furnaces were charged with hot instead of cold coke. Attempts also have been made to stifle the hot coke and utilize its heat, instead of quenching it; but particulars have not been disclosed.

Sensible Heat of the Gas.—The specific heat of coal gas is equivalent to about 0·023 B.Th.U. per degree Fahrenheit per cubic foot of gas. The available fall of temperature of the gas is only about 90° Fahr., or (say) from 160° to 70° Fahr. Therefore, with a mean daily make of 210,000 cubic feet, there should be available: 210,000 × 90 × 0·023 = 434,700 B.Th.U., or, in round figures, 435,000 B.Th.U. This is equal to about 34½ lbs. of coke, having a calorific power of 12,600 B.Th.U. per pound, per diem, or about 5·6 tons of coke per annum. Having regard, however, to the facts that the sensible heat of the gas could certainly not be utilized without a loss of at least 25 per cent., and that the rate of cooling or condensation of the gas has to be governed primarily by considerations (such as naphthalene extraction) which would be opposed to economical transmission of heat to a boiler, there appears no prospect of a more or less costly installation for utilizing the sensible heat of the coal gas becoming remunerative.

Sensible Heat of the Flue Gases.—A temperature of 480° to 570° Fahr. is requisite for the chimney draught. Generally the attempt is made to work the settings so that the flue gases are discharged into the chimney at 750° Fahr. at the highest; and in that case it would scarcely pay to apply the heat of the flue gases to other purposes. In cases where their temperature of discharge is higher, the better course would be to control the working of the settings by analysis of the gas entering the recuperator, and thus avoid late combustion.

The value of the sensible heat of the flue gases may be calculated thus: If the flue gases contain about 18 per cent. of carbonic acid, and the coke used as fuel contains 15 per cent. of ash, the volume of flue gas proper per pound of coke consumed should be about $\frac{85 \times 3000}{100 \times 18} = 141$ feet. The specific heat of the flue gas between 750° and 930° Fahr. is equivalent to 0·023 B.Th.U. per degree Fahrenheit per cubic foot, and thus for a fall of 180° Fahr. (100° C.), the total heat available for utilization amounts to: 141 × 180 × 0·023 = 584 B.Th.U. per pound of coke consumed. This quantity of heat corresponds with about half-a-pound of steam, of half an atmosphere above normal pressure, obtainable from the heat of the flue gases for every pound of coke used as fuel in the producer furnace. But even by cooling the flue gases from (say) 1290° to 570° Fahr., the fall of temperature would be so small comparatively that the boiler would require to have a very large heating surface, and there would be great losses by conduction and radiation, or the rate of flow of the hot gas would have to be greater than would accord with a really high utilization of their heat. For these reasons, and out of consideration for reliability, the production of steam at high pressure (six to eight atmospheres) seemed impracticable.

The Pintsch-Bolz settings, however, have an equipment on these lines; the lower part of the chimney being encased by a boiler envelope, in which the comparatively hot (from 1110° to 1470° Fahr.) flue gases provide the steam needed for the producers and for making water gas in the retorts. An installation at Düsseldorf which has been investigated did not, however, afford sufficient steam, unless the fuel consumption was raised with a view to increasing the steam production.

While the foregoing considerations showed that, for a works of 70 million cubic feet per annum production, recovery of the sensible heat of the coal gas and of the hot coke would be useless, it appeared that the whole of the steam required on the works could be obtained from the surplus heat of the flue gases in conjunction with ulitization of the radiation from the settings. Some data from the working of the vertical retort settings at Aschaffenburg were obtained at the end of the year 1913. The temperatures in the combustion chamber, at the level of the first and second flues, averaged, in three retort-settings, respectively: (1) 2174° and 1992° Fahr.; (2) 2264° and 2003° Fahr.; and (3) 2309° and 1850° Fahr. The temperatures at the first level were not therefore exceptionally high. The temperatures of the products of combustion alongside the doors of the producers at about the level of the eye were, to left and right of the settings: (1) 1166° and 1400° Fahr.; (2) 1376° and 1432° Fahr.; and (3) 1380° and 1328° Fahr.—giving an average of 1346° Fahr. These temperatures are rather high, and suggest that at times comparatively large quantities of combustible gas enter and burn in the regenerative passages. Some analyses of the flue gases at the inlet and outlet of the passages showed that they were free from serious leakage. It appeared that the flue gases left the setting at an average temperature of 1346° Fahr., and containing an average of 18·2 per cent. of carbonic acid. If there were no question of utilizing the sensible heat of the flue gases, it would undoubtedly be possible so to control the combustion in the setting as to secure better results; but this would entail much expenditure of time.

The possibilities of utilizing the sensible heat of the flue gases with a minimum (summer) make of 140,000 cubic feet and a maximum (winter) make of 280,000 cubic feet per diem, may be stated thus: The heat recoverable per pound of coke consumed in heating the settings for a fall of temperature of 180° Fahr. is in practice about 540 B.Th.U. [584 B.Th.U., in theory—*vide supra*]. If an available fall of temperature of 360° Fahr. is assumed, then in summer, with 6600 lbs. of coke used daily as fuel, there would be: 2 × 540 × 6600 = 7,128,000 B.Th.U. per 24 hours, or nearly 300,000 B.Th.U. per hour. If an available fall of 450° Fahr. and a daily consumption of 11,000 lbs. of coke were taken for the winter, there would be: 2·5 × 540 × 11,000 = 14,850,000 B.Th.U. per 24 hours, or nearly 620,000 B.Th.U. per hour.

Earlier investigations by Herr Kraus, of Stuttgart, indicated that the heat lost by radiation from the settings was rather greater than the recoverable flue-gas losses. Assuming that half the heat radiated from the settings can be recovered by enveloping the sides and top of the settings with systems of water-tubes, it follows that the whole needs of the gas-works for steam for power and heating purposes will be more than met by the heat recovered from the flue gases and the settings. But Herr Kraus, as well as Herr Hollweg, of Munich, who had also studied the question, considered that the recovery of the heat as high-pressure steam was a difficult matter, which could not be advocated. They, however, contemplated putting the boiler within the setting, and it is very much simpler, especially with vertical retorts, to place it on top, and to arrange for a portion of the flue gases to circulate round the boiler before they heat the air supply. If this is done while one system of tubes takes up further surplus heat from the flue gases and another, placed in the insulation of the top and side of the setting, intercepts as much as possible of the heat which would be dissipated by radiation, it is quite possible to produce steam at high pressure. The boiler and systems of tubes, in so far as they are directly in contact with the flue gases, must be of such dimensions that they can be readily regulated, and will not interfere with the proper working of the setting. Experiments in this direction are in progress at the Aschaffenburg works; but owing to various causes of delay, results cannot yet be reported. Trials are also being made there of the transmission of heat by means of simple insulated water-pipes.

GAS LIGHTING AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION, SAN FRANCISCO.

By C. B. Babcock, of San Francisco, the Chairman of the Publicity Committee.

[From the "American Gas Institute News," Aug. 1.]

NIGHT VIEW, TOWER OF JEWELS AND AVENUE OF PALMS, SAN FRANCISCO EXHIBITION.

It is evident to every visitor to the exposition—even to the most casual observer—that gas for lighting purposes is far from being a back-number. This source of lighting has been utilized to the greatest extent—in fact, in portions of the grounds, entirely depended upon. One has but to travel through the great State and Foreign Section, along the Avenue of Progress, Avenue of Palms, Administration Avenue, and the Zone to notice the predominance of gas street lighting.

This may seem almost like hearsay to the average layman, and even the technical electric man, but upon investigation the facts prove the statements, and gas men the world over are more than pleased at this just recognition of the great qualities of gas for street illumination. Its light is soft, pleasing, and well-distributed—quite a contrast to the jarring rays of the more brilliant current. Many of the most pleasing lighting effects produced have been made possible only through the use of the old and familiar gas, but utilized in the most modern development of the gas-lamp maker's art.

The Panama-Pacific International Exposition is not, as some would have us believe, an exclusive exhibit of electric illumination, although it plays a great part; and this article is to point out that gas lighting is in reality a great factor in the success of the illumination scheme at the exposition.

At midnight all electric lighting is turned off, and gas is used entirely for patrol lighting; for it is far more dependable, and less liable to be affected by the elements.

It is interesting to note that 50 per cent. of the entire output of gas in the United States is used for lighting purposes; and this in spite of the fact of strong competition and the development of gas appliances wherein gas is used for domestic and industrial fuel.

Artificial lighting is acknowledged to have furnished one of the greatest benefits to mankind; and in this work gas should be recognized as one of the greatest factors.

On the Zone (the playground of the exposition) the adaptability of gas as an ornamentation scheme is most vividly portrayed. There are 72 posts, installed 75 feet apart, each post 39 feet in height, and surmounted by a conventional sea lion. At the height of 20 feet from the ground ¾-inch pipe runs out, forming two arms encased in staffwork—the sea lion effect being still carried out. From these arms are suspended two five-mantle, low-pressure lamps, giving 900-candle power each. The lamps are encased in lanterns of various designs, the latter being a wooden frame work with canvas covering.

The distribution of gas throughout the Zone is high-pressure; so a regulator is placed at the base of each post, and there also is installed a ¾-inch bye-pass cock. This, in connection with the mercury valve distance-lighting equipment, makes it possible to turn on and off the lamps at the base of the post.

The soft, pleasing rays of gas diffused through the vari-coloured lanterns give an ornamental, and withal a restful look to this street of amusement.

At all of the exits and entrances of the exposition grounds low-pressure gas-lamps are installed, and burn nightly; and at two of the entrances and all the exits gas arcs are used exclusively.

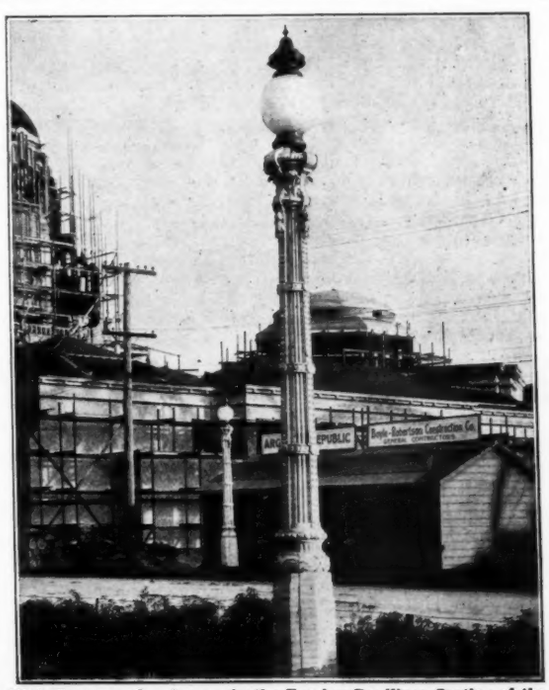
Throughout the large area comprising the State and Foreign Section, high-pressure lamps are installed, one to the post, on 2½ lbs. pressure, two mantles to the lamp, and giving 1100-candle power.

One enters the Court of the Universe at nightfall, and from out the serpent-headed urns great tongues of flame dart hither and yon, now flickering, now stretching forth in ecstasy, a weird light from out the past, beckoning—ever recalling the fires that burned on the altars of Ancient Rome. This effect is produced by the use of high-pressure gas pouring through ½-inch pipe.

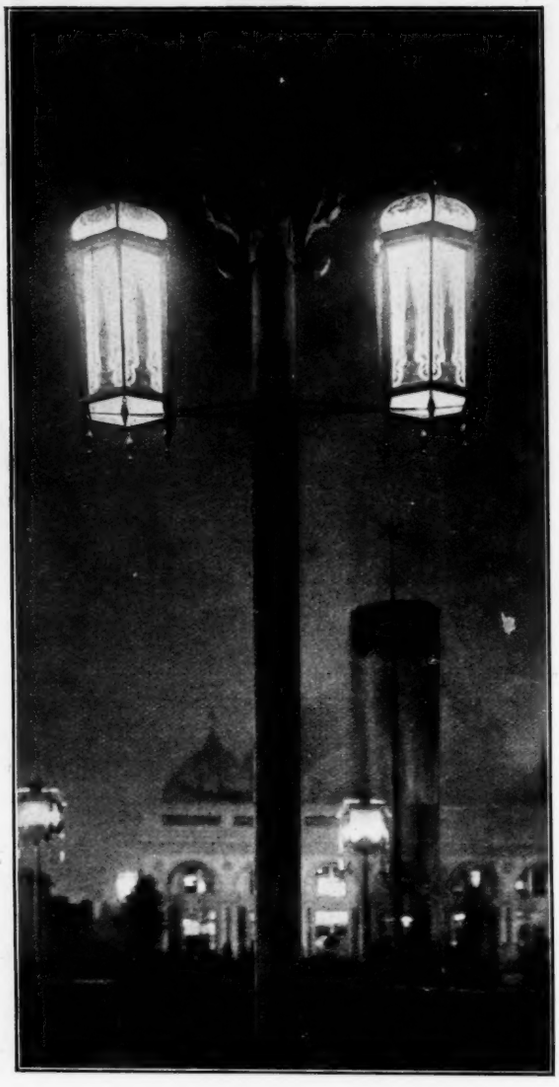
Not only is gas lighting used by the exposition proper, but practically all the buildings on the grounds are piped for gas, and modern gas-lamps installed, government buildings, railroad company exhibits, and concessions on the Zone.

In the corridors surrounding the courts of the exposition buildings gas-lamps are also used, and installed on beautiful staffwork brackets. So if the entire electric lighting equipment should be out, the crowds nightly viewing the fair would be able to find their way safely out of the grounds.

For many years it has been the dream of the older men of the gas industry to make a great exhibit of manufactured equipment used in the gas business, and so, through the efforts of a number of the leaders of the gas business, and the manufacturers of appliances, this consummation came about, and the "Collective



High-Pressure Gas-Lamps in the Foreign Pavilions Section of the Panama-Pacific Exposition.



Type of Low-Pressure Gas-Lamp Installed on the Zone at the Panama-Pacific International Exposition. Lamps enclosed in Various Designs of Lanterns.

Gas Exhibit," comprising 10,000 feet of space in the Palace of Manufacturers, embodies the realization of their dream.

There is much of interest in this collective gas exhibit; but the first thing that attracts, and the memory of which will long remain, is the beautiful and artistic lighting effect. In the centre of the collective gas exhibit building is a great dome, 30 feet high, 28 feet square; and suspended from the dome, 20 feet from the floor, is a massive gas fixture equipped with eight five-mantle, low-pressure gas arc-lamps, with mercury-valve distance-control. The candle power is approximately 5600; and the distribution of light is perfect. As this is the largest gas fixture on the Pacific Coast, it has made a deep impression on all visitors.

The lighting of the booths in this exhibit (of which there are sixty-one) is entirely with semi-indirect fixtures, either in oxidized brass or in Roman gold finish. These lamps are equipped with most beautiful types of glassware. There is no glare; and the lighting arrangement helps to make this exhibit a pleasing place to come to, and where one may spend some profitable and pleasant hours.

On the posts in the aisles are large single-mantle and two-mantle lamps at a height of 9 feet. These hang on very artistic brackets; and as the lamps are in different colours, they bring about a most pleasing effect, and one which relieves any monotony, and withal harmonizes well with the general colour scheme.

The outside of the building is lighted with five-burner outdoor lamps of special design, so that all visitors entering the Palace of Manufactures are bound to be attracted by the pleasing lighting effect.

It became necessary shortly after the exhibits were installed in the building to hang signs stating "Lighted by Gas," as many visitors were heard to speak of the beautiful electric fixtures.

In full recognition of the splendid exhibit made of gas appliances, the Jury of Awards has given the Grand Prize to the collective gas exhibit.

The manufacturers of lighting equipment are wide awake and alive to the great future of gas lighting, and for many years past, and at the present time, have put the best of their brains and capital in making it possible for the gas companies to hold their own against competition. Surely with the modern appliances at their command, there is no valid reason why gas lighting should not still continue to hold a dominant place in the lighting of the world.

It has been deemed fitting by the leaders in the gas industry that this collective gas exhibit be held in San Francisco during the exposition commemorating the completion of the Panama Canal—the greatest achievement of modern times—in order to show to the world that the gas industry has kept pace with modern progress and development.

Before the close of this great exposition, on Dec. 4 next, every gas man should make an effort to visit it; and when he comes he will be sure of a hearty welcome, for "California invites the world to the Panama-Pacific International Exposition."

RESEARCH WORK AT THE NATIONAL PHYSICAL LABORATORY.*

It was pointed out in the report of the National Physical Laboratory for the year ended the 31st of March last [see "Journal," Vol. CXXX., p. 692] that research work in many departments of the laboratory had necessarily been curtailed owing to reduction of staff, consequent on the call of many members to the colours, and to imperative work having been undertaken for the Admiralty and other government departments. This curtailment of research has not yet had time to affect the published records of the work done at the laboratory, as the volume of "Collected Researches" just issued shows.

This volume contains eleven papers, of which two—both by Messrs. Clifford C. Paterson and B. P. Dudding, of the Physics Department—are of direct interest to gas men. An abstract of one, on "The Unit of Candle Power in White Light," which is reprinted from the Proceedings of the Physical Society, has already been given in the "Journal" [Vol. CXXX., p. 448]. The paper is a succinct record of a prolonged series of investigations, in which six observers were generally concerned, and the extent of the ground covered is indicated by the following synopsis: (1) The differences in the colour of the light radiation from different sources of white light cause uncertainties in photometric determinations which may be minimized by the use of the cascade principle. (2) Six sets of electric sub-standards of candle power are described, varying in colour from that of the pentane lamp (red) to that of a tungsten-vacuum lamp operating at 1·5 watts per candle. (3) The differences between the values obtained by different observers in the process of stepping from one colour to the next are discussed and compared with those obtained by the direct comparison of the first and last sets of sub-standards. (4) The probable errors of the determination are discussed, and shown to be of the order of 0·25 per cent. (5) The absolute value of the unit of candle power has been re-determined from the pentane lamp, and found to agree to within less than 0·1 per cent. with the determination made by Mr. Paterson ten years ago. (6) The corrections to the pentane lamp for humidity and barometric changes have been re-determined and found to agree within narrow limits with those previously found by Mr. Paterson. (7) The relation between the humidity and temperature corrections for the pentane lamp is discussed; and it is suggested that these two effects acting together may account for the discrepancy between the humidity constants of the lamp as determined in London and Washington.

The photometric work involved in these investigations must indeed have been laborious, and Messrs. Paterson and Dudding deserve the thanks of all to whom accuracy in photometry is of importance for the assiduity with which they have pursued this fundamental research. Incidentally, the authors refer to the flicker method of comparison in the following words: "Several flicker photometers were tried by four of the observers, but the precision of the measurements was found to be so inferior to that obtainable with the Lummer-Brodhun photometer that, after much time had been spent, the attempt was abandoned. The authors were unable to experience the sensitivity claimed for the flicker photometer by some other experimenters, and the results they obtained with it were of quite a different order of accuracy from those forming the subject of this paper. Moreover, it is found that the fatigue occasioned by continuous photometric observation throughout a whole day necessitated by these standardizations was very serious with the flicker photometer, and tended still further to diminish the sensitivity."

The second paper by Messrs. Paterson and Dudding is on the "Estimation of High Temperatures by the Method of Colour Identity," and is also reprinted from the "Proceedings" of the Physical Society. It describes preliminary experiments on the method of "colour identity" for estimating the temperature of incandescent substances such as metal or carbon radiating in the open, by which method the "true" temperature of certain bodies as distinct from their "black body" temperatures can be arrived at with a very fair degree of accuracy. By the colour identity method, the total luminous radiation (white light) from a black body is made identical in colour with that from the incandescent

* The National Physical Laboratory. Collected Researches, Vol. XII., 1915. London: Harrison and Sons; 1915.

metal under examination by adjusting the temperature of the black body until there is colour identity in the field of a Lummer-Brodhun photometer. Comparisons have been made with the results obtained by other methods, and the colour identity method has been shown to give the correct result for melting platinum—viz., 1750° C. The importance is shown of the colour of the radiation from any proposed standard of light. The increasing efficiencies of modern sources of light owe these increases mainly to higher running temperatures, and hence the light emitted tends to consist of a relatively larger proportion of shorter waves. The light from the Hefner lamp has been found by the authors to correspond in colour with that from a black body at 1540° C., and that from the pentane lamp to 1610° C.

The authors have applied the method described in their paper to determining the temperatures of the filament in various types of incandescent electric lamps run in stated conditions. It would be interesting if the method were extended to the measurement of the temperature of the mantle substance in high and low pressure incandescent gas-burners.

The volume also contains an interesting paper, of a preliminary character, on the "Emission of Electricity from Various Substances at High Temperatures," by Messrs. G. W. C. Kaye and W. F. Higgins, assistants in the Physics Department. The other papers in the present volume of "Collected Researches" do not call for comment in the "JOURNAL."

COKING AND BYE-PRODUCTS.

By "Event and Comment."

MANUFACTURE OF EXPLOSIVES.

MANY coke-oven people are of opinion that the present is an opportune time for developing the scope of coke-oven activities and for entering on the manufacture of new chemical products. The writer has previously stated in these notes that, in his opinion, it would be wisest to confine such developments to the production of the so-called intermediate products, except in very special cases where the facilities for the commencement of the new industries are exceptional. The manufacture of explosives at the present time is, of course, of predominant interest; but industrially the manufacture of synthetic dyestuffs, and also of pharmaceutical chemicals, is equally important. It must always be remembered, however, that these industries are highly specialized, and that trained men are essential to carry them on. Such trained men are almost impossible to get hold of at present, and indeed their number is very limited.

Picric acid and trinitrotoluene are, of course, the explosives which are of most interest to coke-oven people—the former being a derivative of carbolic acid, and the latter of toluene. The manufacture of picric acid has been carried on for a number of years; but that of trinitrotoluene is comparatively new, and hence little is known of it by the average person. It has been largely developed by the Germans as a modern explosive; and they have made full use of the large supplies of toluol which they have available from their numerous bye-product coke-ovens. It is being stated again and again that toluene is obtained solely from coal tar. This is not correct, as a very large proportion of it comes from the crude benzol which is nowadays extracted on most coke-oven plants. Crude benzol is a mixture of varying proportions of benzene, toluene, xylenes, solvent naphtha, &c., and has to undergo many refining operations before the toluene extracted from it can be used for the manufacture of T.N.T. It is essential, in order to produce the best quality of explosive, that the toluene used shall be as nearly pure as possible; and for this reason the product is very carefully fractionated and only the proper fraction is employed. The nitrification of toluene to form T.N.T. is not a dangerous operation in the sense that there is a risk of explosion, and the T.N.T. itself is quite safe to handle. The nitration is carried out in three stages—mono-nitro, di-nitro, and tri-nitro toluene being respectively produced. Each nitration involves the use of a considerable quantity of both nitric and sulphuric acids; hence it is most important that before considering the manufacture of T.N.T. the requisite supplies of acid should be assured. At the present time both acids are scarce: and the lack of sulphuric acid for sulphate of ammonia manufacture is very acute. A considerable quantity of mixed nitric and sulphuric acids is produced during the process, and the difficulty of putting these to satisfactory use adds greatly to the expense of the manufacture. For use in shells, the T.N.T. is usually melted and poured into the shells in the molten state; a fulminate of mercury cap being used to explode it. T.N.T. is a pale yellow crystalline body melting at about 82° C., is very stable, and will stand long exposure at all normal temperatures without undergoing any change.

LAST DAYS OF BEEHIVE OVENS.

At the present time there is not much incentive to colliery people to spend large sums of money in erecting new plant, owing to the abnormally high cost of material and also to the high cost of labour and the scarcity of men. One would think, however, that if any final argument was needed against the continuation of beehive coking, surely it is supplied by a review of our circumstances just now with regard to munitions of war. In a broad sense, bye-product coke-ovens have saved the country from a very serious situation indeed, as without them we should have been in a deplorable position as far as high explosives are concerned. Enormous quantities of tar and benzol are recovered from bye-product ovens which five years ago were not available. It is frequently said that had Germany been at war with us five years ago, our preparations and resources would have been far better than they are, while those of Germany would have been much less advanced. This may be very true in some respects; but from the point of view of high explosives it is certainly not correct. Comparatively few bye-product coke-ovens have been erected in Germany during the last five years [they had done away with beehive ovens long before that]; while in this country there has been enormous development.

It will be seen from the previous note that we are very largely dependent on bye-product coke-ovens for our supplies of high explosives. Beehive coke-ovens contribute nothing which can be used for the manufacture of explosives. Nay—worse than that—they actually waste enormous quantities of raw materials. If the coal which is to-day carbonized in beehive ovens were treated in bye-product ovens instead, our supplies of raw material for explosives would be increased at least 50 per cent., as most of the beehive ovens are dealing with high volatile coals which yield both good quantities of tar and of benzol. Beehive coking, therefore, at the present time is a national danger, and it is surprising that the Government has taken no action to restrict it. The writer was informed only last week that certain bye-product ovens could not be worked at full capacity owing to lack of men. If this is correct, then it ought to be remedied, even if it means compulsorily closing beehive ovens to get the necessary men. Just now coke is fetching a very high price, and beehive ovens can be worked at a fairly substantial profit. In some cases—particularly small plants—the beehive ovens could not be replaced by bye-product ovens; but in many instances assistance might well be given by the Government to erect new ovens, and obtain the advantage of the additional output of munitions.

Presentation to Mr. Doig Gibb.

The current issue of the "South Metropolitan Gas Company's Co-Partnership Journal" contains a notice of the officers' present to Mr. W. Doig Gibb on the occasion of his retirement from the position of Chief Engineer of the Company. From this it appears that Messrs. Braidwood, Browne, Baily, Rossiter, and Stokes were deputed to present to Mr. Gibb, on behalf of their brother officers, a farewell address, together with a rose-bowl and candelabra in silver. The rose-bowl bears this inscription:

> Presented to W. Doig Gibb, Esq., M.Inst.C.E., by the officers of the South Metropolitan Gas Company, as a mark of their sincere regard and esteem on his resigning the position of Chief Engineer, June, 1915.

The presentation was made in well-chosen words by Mr. Braidwood, who said that he hoped both Mr. and Mrs. Gibb would regard the gifts as but a slight tangible expression of the sincere feelings of esteem entertained towards him by the staff of the Company, and of the earnest wishes of all his former colleagues for his speedy return to robust health. The other members of the deputation cordially endorsed Mr. Braidwood's remarks. In the course of a characteristically happy speech, Mr. Gibb acknowledged the kindly gifts. The members of the deputation, it is added, were very gratified to find Mr. Gibb improved in health and to hear that his doctor's latest report was most encouraging.

Further Restriction of Coal Exports.—The announcement is made by the Board of Trade that, by an Order of Council, the exportation of coal and coke will no longer be permitted freely to Allied countries after Friday next, and will be prohibited to all destinations abroad other than British Possessions and Protectorates. Applications for licences to export these commodities to prohibited destinations should, as hitherto, be addressed on a special form to the War Trade Department, No. 4, Central Buildings, Westminster, S.W. Commenting upon this notification, "The Times" says: "This further restriction placed on the export of coal is clearly a result of the Bill limiting the price of coal. It was obvious that when a maximum price for coal was fixed in this country, there would be a tendency to export large quantities to countries where there was no such maximum price in force. . . . There is, we believe, no intention whatever of restricting the reasonable requirements of the Allies, whether they need the coal for their railways or industries." The following official statement was issued by the Foreign Office at the end of the week: "The Secretary of State for Foreign Affairs desires to explain that this regulation is in itself in no way intended to alter the actual state of affairs with regard to the export of coal beyond the fact that licences will be required for coal exported to any place which is not a British possession or protectorate. The order is not designed for the purpose of entirely preventing coal exports, but is the consequence of certain domestic legislation by which the price of coal in the United Kingdom has been regulated, thereby rendering necessary a control of the British coal trade for the purpose of maintaining a proper proportion between home and foreign consumption."

THIS YEAR'S EXAMINATION IN "GAS-FITTING."

List of Successful Candidates.

THE pass-lists for the last City and Guilds of London Institute examinations in "Gas-Fitting" have been sent to the Institution of Gas Engineers; and they have been forwarded to us for publication by Mr. Walter T. Dunn, the Secretary. The questions set by the Examiners—Mr. H. Kendrick and Mr. R. Halkett—appeared in the "JOURNAL" for May 4 (p. 290). The names of the prize winners are given on p. 282 of to-day's number.

GAS FITTING.

FINAL GRADE.

First Class.

Bewsher, Bryan
Blair, William
Carr, George
Chiverill, Henry W. F.
Cottle, Ernest A.
Cotton, Ernest J.
Doak, David
Dowling, William J.
Downton, Ernest M.
Eabry, Richard G.
Filby, George
Flaherty, William
Fraser, Hugh
Fulton, Robert
Johnston, Robert
Lett, Thomas W.
Lewis, Richard S. B.
Muggleton, Herbert
Myers, Thomas O.
Pascoe, Archibald T.
Park, Harold G.
Platt, Arthur H.
Reid, Robert
Rutherford, Henry
Shore, Charles L.
Smith, David
Tansley, William H.
Walton, John

FINAL GRADE.

Second Class.

Catton, Albert E.
Crathorn, Ernest
Davis, Frank W.
Dempster, James
Duffield, Oliver
Evans, James G.
Gunner, Leonard W.
Humphries, William
Incledon, Albert
Maull, Solomon
Nicholas, Albert E.
Power, Arnold J.
Speirs, Alexander
Stout, William
Thomas, Leonard J.
Woodland, Charles R.

GRADE I.

Allen, Ernest A.
Allum, Frank E.
Ayscough, Charles A.
Barker, John
Battishill, Harry W.
Bayne, Alfred
Bessom, John W.
Blake, George W.
Booth, John A.
Bridge, John
Burrell, Charles H.
Burton, Edward P.
Carpenter, Arthur S.
Chapman, Cyril S. P.
Clare, John
Clare, Leverington
Clarke, Frederick H.
Chorlton, William
Collins, Leonard
Crayden, Alfred J.
Creese, Thomas
Creswell, Albert
Davidson, W. G. E.
Dean, George E.
Doley, Henry
Doyle, Vincent
Dunn, John
Duncalfe, George H.
Dyson, Thomas
Fifield, Hugh S.
Fiford, Charles S.
Fitton, Leonard
Fletcher, William
Fudge, Percy
Grigsby, Arthur E.
Green, Richard
Guest, William
Hall, Alfred
Hancock, Herbert
Haynes, Percy W.
Hewlett, Reginald V.
Hildred, Joseph F.
Holmes, Robert H.
Holt, William
Holroyd, John W.
Houghton, Albert V.T.
Hubbard, Harold C.
Huggett, Alfred
Humpheson, Fred. J.
Johns, Richard
Johnson, Harold
Jones, Arthur B.
Jones, Thomas
Lamming, Thomas H.
Lawe, John H.
Leaver, Sidney
Lea, William C.
Lister, Albert W.
Lovsey, William E.
M'Cartney, William E.
Mann, William R.
Maming, John
Meek, Harry
Metcalf, Francis H.
Millett, William J.
Moles, Harold
Moss, Richard H.
Morton, Sydney H.
Murrin, Willie W.
Neale, John F.
Neely, William G.
Partridge, Howard
Perry, Edwin J.
Pilkington, Joseph
Pinn, Stanley
Pope, William R.
Price, Charles H.
Robins, Leonard
Robinson, Horace J.
Rushby, Harold
Salt, Thomas
Saunders, Arthur S.
Scott, Arthur
Sherriff, Tom
Shone, John
Spurgeon, Charles E.
Starkings, Thomas W.
Surtees, Joseph
Trevitt, Robert
Trobe, Norman
Vorley, William A.
Walker, Frederick
Walker, Harold S.
Wallace, Eric
Wastell, Sidney
Whitlam, Herbert R.
Whitworth, John A.
Wilkes, William A.
Williams, Thomas
Willis, Frank D.
Willmot, Francis J.
Woodcock, Herbert G.
Wright, William G.
Wynn, Harold J.

GRADE II.

Akerman, Edwin J.
Bacon, Alfred J.
Bellamy, Frederick B.
Bevan, Leonard
Brooks, Charles
Buchanan, John
Burrows, Albert
Carlton, John W.
Casey, Frank R.
Crabtree, Harold G.
Creasey, Arthur E.
Cree, Ernest
Davies, Frederick
Dale, William E.
Day, Edward
Entwistle, William E.
Evans, Joseph L.
Ford, Francis V.
Ford, Frederick R.
Gardener, Walter F. J.
Gay, Edward H.
Glanville, Percy J.
Grimsley, William
Harrison, Norman H.
Helyar, Ernest
Hislop, Harry
Holben, Arthur R.
Holmes, George
Holmes, James
Hyde, Joseph P.
James, Alfred
James, Edward
Moden, Robert
M'Call, William
M'Morrow, William J.
Morgan, Lloyd T.
Naish, John T.
Nicholls, Adolphus W.
Penny, Charles
Pickett, Edgar
Plevin, Edwin
Potter, Sidney J.
Salway, Bert
Smith, Ernest T.
Smith, Frederick
Squires, Ernest H.
Stock, Arthur R.
Telling, Thomas J.
Tripp, Alfred J.
Toms, Alfred T.
Vail, John B.
Viney, Walter J.
Wardell, John C.
Wardle, Thomas J.
Webb, George F.
Whitehouse, Harry
Woodley, Charles A.

THERMAL PHENOMENA IN CARBONIZATION.

The report by Mr. Harold Hollings, B.Sc., the Gas Research Fellow, and Professor J. W. Cobb, B.Sc., F.I.C., which was presented to the Institution of Gas Engineers at the annual general meeting in 1914, dealt with a portion of the work carried out during two years by them on "Thermal Phenomena in Carbonization." The report, which was given in full in the "JOURNAL," Vol. CXXVI., p. 917, embodied (1) a critical study of the work of previous investigators, especially Mahler and Euchène, (2) a description of the authors' experimental method, and (3) the results of observations made by it of the heat absorbed or evolved at different temperatures when a bituminous coal [Monckton Main], in an inert atmosphere, was raised at a uniform rate from cold to about 1100° C. (2010° Fahr.).

A paper by the same authors, entitled "A Thermal Study of the Carbonization Process," which has been published in the current (July) number of the "Journal of the Chemical Society," repeats the description of their experimental method, and gives the results of its application to the study of other coals and allied materials. The following table contains the descriptions and analytical data of the materials reported on in this paper and the earlier report.

Following the experimental method applied to Monckton Main coal in the investigations described in the report to the Institution of Gas Engineers already referred to, the authors have now obtained "heating curves" for the other materials named in the table. In the case of pure cellulose, there was a sudden evolution of heat at 345° C., apparently due to chemical action at that temperature; whereas with dehydrated cellulose and lignite the evolution of heat extended from 280° to 420° C., and was probably due to a series of decompositions. Decomposition as sudden as that of cellulose has not been found with any coal. The sudden evolution of heat observed with cellulose is presumably connected with the expulsion of hydroxyl groups, with consequent molecular condensation in the residue. The corresponding evolution of heat begins in uncertain fashion with dehydrated cellulose and lignite at 280° C., but with coals, in which presumably cellulose is still further degraded, scarcely below 400° C. With anthracite, in which the degradation of cellulose is most nearly complete, there is practically no such evolution of heat at these low temperatures. Both the extract and the residue from extraction of bituminous coal by pyridine showed marked evolution of heat between about 200° and 320° C.; but no thermal phenomena were noticeable with the pyridine-chloroform extract. The high proportion of oxygen in this particular product probably arises from oxidation in the course of its extraction; and the oxygen in it may therefore be

Materials with which Observations were Made.

Nature and Origin of Material.	Volatile Matter by American Committee's Method.	Ash	Percentage of Ash-Free Material.				
			Carbon.	Hydrogen.	Oxygen.	Sulphur.	Nitrogen.
	Per Cent.	Per Cent.					
Anthracite, Ystradgynlais	5·97	2·12	89·20	4·31	3·91	1·34	1·25
Bituminous coal, Beeston (from Dr. R. V. Wheeler)	—	—	83·05	5·51	8·08	2·12	1·24
" " " Pyridine, extract of	—	—	83·11	6·06	5·96	3·89	0·98
" " " Pyridine, residue from	—	—	80·80	5·69	10·17	2·43	0·91
" " " Chloroform, extract of	—	—	75·54	7·66	14·18	1·86	0·76
" " " Chloroform, residue from	—	—	80·25	5·28	11·45	2·09	0·93
" " New Hucknell	37·30	3·77	80·39	5·88	10·63	1·71	1·39
" " Monckton Main	40·20	5·43	76·52	5·21	14·92	1·73	1·62
Cannel, Brodsworth	45·27	4·80	80·79	5·46	10·60	1·21	1·94
Lignite, Bovey Tracey	65·00	5·20	63·00	6·26	28·58	1·66	0·50
Cellulose dehydrated by strong sulphuric acid	65·20	1·13	58·11	4·11	36·68	1·10	—
Cellulose (cotton wool, theoretical composition)	—	—	44·40	6·20	49·40	—	—

regarded as in a different form from that in degradation products of cellulose.

The next stage in the heating—viz., between 400° or 450° and 600° C.—manifests the characteristic differences between the different types of materials. There is absorption of heat, which is most marked in the case of dehydrated cellulose, lignite, cannel, and the extract and residue from the pyridine extraction of bituminous coal. With bituminous coals there is merely a break in the evolution of heat about 500° C., and with anthracite there is some absorption of heat between 520° and 600° C. The thermal phenomena in this stage vary according to the nature of the coal, on which depends the quantity and quality of the oils, unsaturated hydrocarbons, higher paraffins, and oxygenated compounds produced.

The next stage, from about 600° to 800° C., is distinguished by evolution of heat, which is the more marked the less oxygenated is the coal or other material undergoing carbonization. Thus with cellulose, dehydrated cellulose, and lignite the evolution of heat from 600° upwards is not pronounced, but of the three it is greatest for the last-named, with which it begins below 600° C. With cannel and bituminous coal marked evolution of heat starts below 600° and continues to about 800° C.; while with anthracite there is a still more pronounced evolution of heat from 650° to 840° C. Both the extract and the residue from the extraction of bituminous coal by pyridine give heating curves which at this stage are in general agreement with that for the coal itself, though the evolution of heat is slightly less marked. It would appear, from the resemblance in behaviour of the extract and the residue and the oxidation effects, that prolonged extraction of coal by pyridine effects its partial decomposition and not simple preferential solution.

It is at this stage that methane predominates in the gas liberated; and since heat is evolved when methane is formed from its elements, it is likely that the considerable production of methane is chiefly responsible for the evolution of heat which with bituminous coal occurs in a most marked degree between 610° and 750° to 800° C. If it is a fact that the carbonization of coal as a whole is attended by evolution rather than absorption of heat, it would appear that the formation of methane is the principal factor in determining this evolution of heat.

Above 800° C., hydrogen is the chief product of the carbonization of the coal. The heating curves for cellulose, lignite, cannel, bituminous coal, and anthracite all show an absence of any evolution of heat at this stage, and in many cases there would appear to be a slight absorption of heat. This absorption is most marked with anthracite and cannel.

The authors are hoping to collect and examine the volatile products of carbonization at each stage of the evolution or absorption of heat, as ascertained by their method of observing thermal phenomena, in the case of one or two typical coals. They will thus become in a position to effect a useful chemical and thermal correlation for different stages of the carbonization process. The process of carbonization cannot be represented as a single reaction; and hence the value of determinations of its net thermal result is, in a sense, limited. At different temperatures reactions in which heat is definitely evolved are balanced more or less by reactions in which heat is definitely absorbed; and these reactions, of the existence of which a net result gives no evidence, may be of considerable importance. Evolution or absorption of heat occurring in a mass of coal at a comparatively low temperature may be regarded as increasing or decreasing respectively the liability to spontaneous heating—an important consideration both in the storage of great quantities of coal and in the behaviour of large masses of coal underground. All the reported results were obtained by raising the temperature of the coke in the control vessel at a uniform rate of 7° C. per minute; but owing to the difficulty with the electric furnace used of securing uniform heating below 200° C., no importance is attached to deflexions in the heating curves below this temperature.

In this digest of the author's communication to the Chemical Society an attempt has been made to correlate in as simple language as possible the new observations with those recorded in their former report, from which also some explanatory matter has been drawn.

Swiss Association of Gas and Water Engineers.—It is announced that the forty-second annual general meeting of this Association will be held at St. Gall on Sept. 11 and 12.

Wedding.—The marriage took place at St. George's, Hanover Square, last Thursday week, of Mr. W. Wythers Gray, the Manager of the Cambridge Water Company, and Miss Myra Pye, daughter of the late Mr. Richard Pye, of Forest Hill.

Issue of South Metropolitan Stock to Consumers.—In connection with the statement made in the report of the Directors of the South Metropolitan Gas Company that, to provide for the extending requirements of the business, stock to the amount of £100,000 is being offered to the employees and consumers, it may be mentioned that the price of issue is £82 per £100 of stock; and there will be no charges or expenses of any kind to be paid by purchasers. The offer is a good one; and as application may be made for allotments in amounts of £5 and multiples of this sum, a brisk demand may be counted upon. It is not surprising to learn that, so popular has this method of purchasing small amounts of stock become, that more than £1,430,000 has been invested in this way by the consumers.

A POWER PLANT PROBLEM.

Cost of Gas and Electricity.

One of the valuable sections of the "Power User" is that which is devoted to "Power Plant Problems," and the solutions offered by readers. The June issue contained several answers to a problem which had recently been set on the subject of the cost of gas and electricity; and we reproduce the main portions of the reply that was placed first by our contemporary, and which was by Mr. H. C. Widlake, of Plymouth, whose interesting series of articles on the "£ s. d. of Power Production" was completed in last week's number of the "JOURNAL."

The problem set by "J. C." (Glasgow) was: Which would be the cheapest power—gas or electricity? The Electricity Department here are prepared to lay cables for 300 yards, for which they require a revenue of £60 per year for three years. I would only be installing, to start with, a 22-H.P. motor, and expect to put down a further 20-H.P. motor in about nine months. Would the installing of electric power be cheaper than a 40-H.P. gas-engine (gas from town)? To this query, Mr. Widlake replied: "J. C.'s" question, unfortunately, leaves many factors to be assumed. He does not state, for instance, the load under which his plant will run; nor does he mention the rate at which the local gas supply authorities are prepared to supply him with gas. I also take it that the £60 per annum for three years, to which he alludes, is a capital charge made by the electric supply people to cover the cost of the 300 yards of cable extension, and is quite separate from the rate which will be charged for the current consumed.

For the purpose of the comparison about to be made, it will be assumed that he has the alternative of being supplied with either gas at 1s. 3d. per 1000 cubic feet or electricity at ¾d. per Board of Trade unit. The fact of his running for the first nine months with one motor does not affect this problem very much; and the comparison will be drawn between an installation of one 20-H.P. and one 22-H.P. electrical motor, running at about 900 R.P.M. and a 40-H.P. gas-engine. It will also be assumed his load factor is equivalent to full load on his plant for 2800 hours per year.

ELECTRIC MOTORS.

The yearly consumption of a 20-H.P. electric motor, assuming the efficiency to be 86 per cent., will be:

$$\frac{20 \times 746 \times 100 \times 2800}{86 \times 1000}$$

= 48,576 Board of Trade units,

that of a 22-H.P. motor possessing the same efficiency will be:

$$\frac{22 \times 746 \times 100 \times 2800}{86 \times 1000}$$

= 53,434 Board of Trade units.

The total consumption of electrical energy per year by these motors will be seen to be 102,010 units; and the costs of this installation will therefore be:

	£	s.	d.
Electrical energy, 102,010 units, at ¾d. per unit	318	15	7
Interest on capital expenditure	8	4	0
Depreciation	8	4	0
Lubricating oil	1	4	0
Capital charge in respect to the cable extension	60	0	0
Total	£396	7	7
Actual working costs per hour		33·9d.	
Actual working costs per brake-horse-power-hour		0·807d.	

GAS-ENGINE.

A 40-H.P. gas-engine working on town gas having a calorific value of 500 B.Th.U., will take about 20 cubic feet per brake-horse-power-hour; and the annual cost of gas for this installation will therefore work out at:

$$20 \times 40 \times 2800$$

= 2,240,000 cubic feet per annum.

The working costs of this installation will therefore be:

	£	s.	d.
Gas consumed, 2,240,000 cubic feet at 1s. 3d. per 1000.	140	0	0
Interest at 5 per cent.	11	0	0
Depreciation at 5 per cent.	11	0	0
Lubricating oil	8	0	0
Actual working cost per year	£170	0	0
Actual working cost per hour		14·5d.	
Actual working costs per brake-horse-power-hour		0·36d.	

SUMMARY.

These figures may be summarized as follows:—

—	Working Costs.		Saving Effected by Using Gas-Engines.
	Gas-Engine.	Electric Motors.	
Per year	£170	£395 7s. 7d.	£226 7s. 7d.
Per hour	14·5d.	33·9d.	19·4d.
Per B.H.P. hour	0·36d.	0·807d.	0 447d.

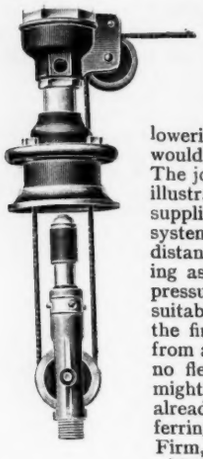
With gas at 1s. 3d. per 1000 cubic feet and electricity at ¾d. per unit, it is obvious from the above tables that, on the basis of

energy alone, electricity would have to be retailed in the neighbourhood of 0·35d. per B.T.U. before it could, in "J. C.'s" district of supply, compete, on economical grounds, with gas-engines.

These figures, as has been pointed out, are based on the assumption that a 100 per cent. load factor is attained. The efficiency of both gas-engine and electric motors will be slightly lower at a lower load-factor.

GAS-LAMP LOWERING GEAR.

ATTENTION is drawn by the London Electric Firm, of Croydon, to an installation of their patent auto-joint lowering gear in connection with the gas-fittings of a church. In such a position, of course, an arrangement like the Company's improved "One-working Part" automatic connector-suspender and their patent self-sustaining winch, for the lowering of the lamps for maintenance purposes, would prove to be a very useful contrivance. The joint, which is shown in the accompanying illustration, it may be remarked, provides for two supplies, thus permitting the adoption of a pilot system, so that lamps may be operated from a distance. The gas-joint is quite tight, withstanding as it does five times the pressure of high-pressure gas; while it is at the same time equally suitable for low pressures. It is pointed out by the firm that their system is one which is free from all unnecessary complications—there being no flexible pipes or supplemental parts which might be likely to prove troublesome. It has already been stated in our columns, when referring to the specialities of the London Electric Firm, that their patent lowering gear is meeting with great success, and is used in connection with street lighting in London, Glasgow, and other places. The devices are made applicable for all ordinary suspension, as well as for fixing to irregular roof members, for arches over gateways, &c. The gear is operated in the simplest possible manner.



Petrograd Gas Distribution Dispute.

A note from Petrograd says that the Gas Lighting Company (with offices in Paris) have laid down a system of pipes in the streets of the city for the supply of the Company's gas to private industrial works. The right to exploit gas and supply it to private houses and workshops, it is claimed, belongs to the town; and, in consequence, a legal complaint was laid against the Company. The Court found the action of the Company to be irregular, and ordered them to remove the pipes. The French Ambassador then appealed to the Town Council not to give effect to the judgment till the end of the war, as it would inflict losses on French people who hold shares in the Company. Out of consideration for the friendly nation, the Ambassador's request was acceded to.

Halifax as an Industrial Centre.

There must be contained in a book just published by Sells Limited, of Nos. 166-169, Fleet Street, E.C., a fairly complete record of all that there is to be said about Halifax. The title of the book, which is edited by Mr. J. P. Wadsworth, is "Halifax a Commercial and Industrial Centre," and the issue has been made under the auspices of the local Chamber of Commerce, Chamber of Trade, and Advertising Club. Though mainly prepared as a commercial guide, the work will be found to be of great interest to the historian and the antiquarian. The present commercial position of the town is a highly important one; but there is, of course, still ample room for expansion, and a feature of the book is a map of Halifax and district showing vacant sites suitable for commercial and residential purposes. Maps are also given of the transit facilities; and the book is profusely illustrated with excellent photographs. The gas, water, and electricity supplies are important points for those who contemplate settling in the town; and so it is natural that particulars should be given of the facilities offered to commercial and domestic consumers. Statistics with regard to the gas supply reveal the remarkable progress that has been made in this branch of municipal enterprise since the purchase of the undertaking by the Corporation for £35,000 in 1855, when the sales amounted to only 51 million cubic feet per annum, and the selling price was 4s. 6d. per 1000 cubic feet. In the ten years 1905 to 1914, the consumption of gas increased from 808 to 832 million cubic feet per annum; the capital employed was reduced from £531,000 to £433,000; the selling price from 2s. 3d. to 2s. per 1000 cubic feet, while all extensions and renewals have been made out of revenue. Glancing over other figures which are given, it is noticed that the capital employed per million cubic feet of gas sold, which in 1875 reached its maximum figure of £960, had by 1914 been brought down to £521. Of the 2s. per 1000 cubic feet received for gas in the latter year, 7·39d. was contributed to interest and sinking fund charges, and 2·77d. to relief of the rates, leaving a balance as net receipts of 1s. 1·84d. per 1000 cubic feet. An example of gas enterprise, it may be mentioned, is the inclusion in the book of a slip containing a beautiful coloured illustration of a modern gas-fire in use.

CORRESPONDENCE.

[*We are not responsible for opinions expressed by Correspondents.*]

Briquettes from Gas-Coke Breeze.

SIR,—We notice Mr. Chaney's letter on this subject in the "JOURNAL" for July 27. We would suggest the following items for the consideration of all gas managers in this country.

If one of the "Ovoid" briquette plants has been in continuous operation for three years in a German gas-works, why should not the same process be successful in this country also? We conclude that the Nuremburg plant must have been a success, or it would not have been kept in continuous work for that time.

Small coke breeze suitable for this purpose can be bought for less than 4s. per ton. Its conversion into satisfactory "Ovoids" is a simple and easy matter, provided suitable machinery is used for the proper mixing, preparation, and agglomeration of the materials, and that the "Ovoids" so produced are of the right shape and size. Given these, the density of the briquettes, when pressed, presents no difficulty in securing their efficient and rapid combustion—either under boilers for quickly raising steam, or for use in producer furnaces.

A good number of leading gas managers in this country are already carefully considering this question. We could arrange for suitable quantities of this fine breeze to be made up into "Ovoids" for testing purposes for any manager who is open to adopt the process if the result proves satisfactory.

YEADON, SON, AND CO.

Leeds, Aug. 6, 1915.

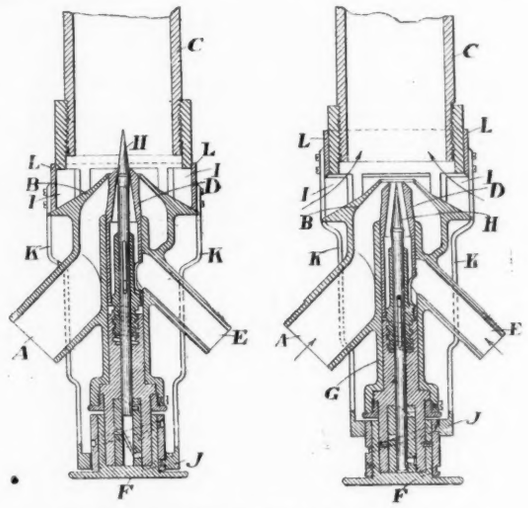
REGISTER OF PATENTS.

Regulating Burners Fed with Compressed Air and Gas.

WELSBACH LIGHT COMPANY, LIMITED; a communication from the Deutsche Gasglühlicht Actien-Gesellschaft (Auergesellschaft), of Berlin.

No. 27,957; Dec. 4, 1913.

This invention relates to a regulating nozzle for compressed air burners; and vertical sections of the device show the parts in their two extreme positions.



Welsbach Compressed Air and Gas Burner Controller.

The gas flows in at A to the conical nozzle B, having a central opening, and from this into the mixing pipe C. The compressed air nozzle D is mounted axially and slidably in the interior of the gas-nozzle, which is provided with an opening through which it receives the compressed air from E; the nozzle D being connected to, and receiving motion from, a hand wheel F. Arranged within the casing G (with capability of rotation, but fixed as regards endway movement) is a member provided with an axial bore adapted to receive the spindle of a needle valve H. At its upper end it is furnished with a socket provided with a quick screw thread, and receives the correspondingly threaded end of a sleeve embracing the spindle and furnished with a threaded enlargement which carries the compressed-air nozzle.

Ways I are provided through which air is sucked in by the rush of compressed air and gas from the nozzles B D in the directions shown by the upper set of arrows, as well as means for opening and closing the ways at the same time that the nozzles are opened and closed and by the same movement of the hand wheel. For this purpose, the wheel is connected to an outer casing on the exterior surface of which a thread is cut in which an internal projection upon the ring J engages. Thus, when the wheel, and consequently the casing, is turned, the ring is moved longitudinally of its axis and communicates motion, by means of the rods K, to the slide valve L, so that the openings through which the air is sucked in become larger or smaller as the case may be. In this way, compressed air, air, and gas are all regulated by a single control.

Water Heating Apparatus or Geysers.

JUNKERS, H., of Aachen, Germany.

No. 3300; Feb. 7, 1914. Convention date, Feb. 13, 1913.

This invention relates to geysers of the type from which a continuous supply of water may be obtained from a container or pipes subjected to the action of the hot gases from a gas-burner in the lower part of the apparatus.

Such liquid heaters (in which the water is warmed during its passage through the heater) have numerous advantages, the patentee points out, in comparison with heaters in which large quantities are heated for storage, "particularly in point of reliability in working and of cheapness." Nevertheless, the use of this class of heater for the production of boiling water has been precluded in practice, because they frequently got out of order and furnished merely hot water—an objection which applies also to heaters fitted with a thermostat for regulating the cold water feed, since in these the member responding to the temperature is placed in the water, which later can only alter slowly in temperature. The consequence is to make the regulator "insufficiently sensitive."

This defect is said to be obviated by the present invention, inasmuch as the heat-sensitive capsule of the thermostat is not bathed or actuated by the water, but by the vapour given off by the heated water or by the steam when the boiling point is attained. To enable this to be effected with certainty, the outflow pipe for the boiling water is provided with a widened portion, and the heat-sensitive capsule of the regulating device is placed in a special chamber connected by a pipe with the steam space of the widened portion of the outflow pipe. This arrangement enables the chamber containing the regulating member to be in an unenclosed or exposed position and surrounded by air, so that as soon as the effluent water no longer boils and no more vapours pass to the chamber, the chamber cools down rapidly and causes the regulating device to respond very quickly. To accelerate the cooling effect, the chamber is provided with apertures through which the hot vapours or steam may pass away. Moreover, the regulating member can be disconnected by providing a closable bye-pass which branches off in front of the cold-water feed member influenced by the regulator, and reunites with the cold-water pipe in the rear.

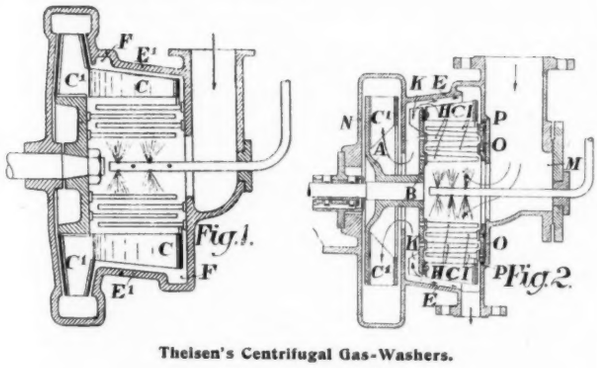
Centrifugal Gas-Washers.

THEISEN, H. E., of Munich, Germany.

No. 9618; April 18, 1914.

This invention is a modification of the apparatus for removing solid and liquid impurities or components from gases according to patent No. 22,433 of 1910, as improved upon by a patent of addition No. 27,696 of 1911.

The patent of addition related to apparatus for removing solid and liquid impurities from gases in which, by an arrangement of twisted laterally open vanes of known type, the gas is first centrifuged on to a lateral washing surface, so that the washing of the gas, and thereby the removal of the impurities, takes place on the lateral washing surfaces; while the gas was centrifuged radially and led off in the fan casing. Catch gutters are disposed about the lateral washing surfaces, in order to collect and carry off separate from the gas the impurities centrifuged on to the lateral washing surface. The present invention relates to a further modification, more particularly for purifying small quantities of generator gases which are very rich in tars; "the consumption of power and water being very small and the construction of the apparatus as simple as possible."



Theisen's Centrifugal Gas-Washers.

Examples of apparatus according to the invention are illustrated in sections representing different modifications—the lower and upper halves of fig. 1 also representing different modifications.

The arrangement shown in the upper half of fig. 1 differs from the patent of addition in that the lower part C of the fan proper C¹ is to a certain extent drawn out laterally; and correspondingly the additional washing surface E¹ appears as a lateral addition to the fan casing. As in the patent of addition, the catch gutter F is arranged at the end of the washing surface E¹. The part C of the fan corresponding to the main vane C¹ is bent or twisted, and the disintegrator device is further so disposed that the mixture of gas, tar, and water which is intimately mixed and atomized therein is centrifuged directly or radially against the washing surfaces E¹ and centrifuged by the vane C, so that all of the impurities (more particularly the whole of the tar and water) are deposited in the gutter, while the approximately pure gas is sucked off laterally through the fan C¹ and carried away at a suitable pressure.

The main advantage, as compared to the arrangement of the patent of addition, lies in the fact that the mixture of gas, water, and tar which is atomized in the disintegrator is first of all vigorously centrifuged on to the washing surface E¹ and purified—thus preventing contamination of the vane proper, C¹, by particles of water and tar.

The form shown in the lower half of fig. 1 only differs from the upper half by the fact that the additional washing surface E¹ is broadened conically in the opposite direction, and the catch gutter F is thus arranged at the right-hand end. The operation of this modification is the same, except that the impurities are carried off on the washing surface E¹ towards the right into the catch gutter F; while the approximately pure gas is sucked off through the fan C¹ at the left.

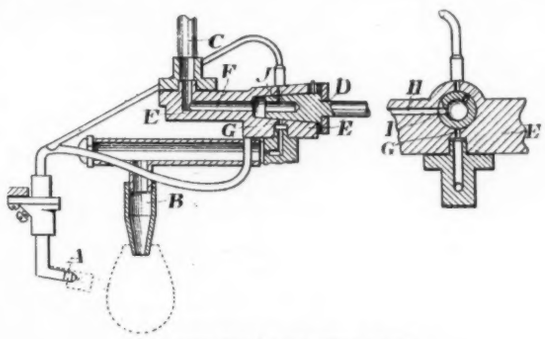
In the arrangement shown in fig. 2, an annular wall G is arranged between the vanes proper C¹ and the lateral parts of the fan C, so that the gas sucked off laterally is again diverted in the direction of the arrows before leaving the apparatus. In this case, the vanes C¹ must be arranged on a disc A and the vanes C upon a disc B, which also carries the rotating disintegrator bars H lying between the fixed bars I. It is preferable to arrange small vanes K about the circumference of this disc B, so as to throw towards the surface E¹ any particles of tar and water which may still remain. Thus the gas is sucked off through the fan C¹ in an almost completely dry and pure state. Water is introduced through an atomizing nozzle inserted through the manhole M. The casing N is preferably made in two parts. The annular disc O, carrying the fixed disintegrator bars I, can then be lifted out with the fan wheel when the upper part of the casing is removed; and this disc can be fastened by a ring P laid within a groove.

Pilot Lights of Gas-Burners.

PEARSON, G. A., of Christchurch, New Zealand.

No. 10,413; April 27, 1914. Convention date, Feb. 11, 1914.

This invention refers more particularly to a pilot light which is adapted to be "flashed" when turning a hollow conical gas-cock, to which the main supply is led, for permitting the supply of gas to the main burner.



Pearson's Gas-Burner Pilot-Light.

A diagrammatic sectional view showing the apparatus, as applied to an inverted burner, is given; also a cross section through the portion in which the gas-cock is mounted.

A is the usual pilot-burner adapted to supply a flame to the mantle for the purpose of igniting the gas at the main burner B—the gas supply for both the main and pilot burners being obtained from a gas-pipe C and controlled by the gas-cock D. E is a distributing casing provided with a tapered bore into which is ground a plug formed with a hollow core in communication with the gas-pipe C by a passage F. Extending outwardly from the bore through the casing are two ports, one of which, G, communicates with the main burner, while the other, H, communicates with the pilot burner. Formed radially through the plug at the required point so as to communicate between the periphery of the plug and the hollow core is a port I, adapted, when the plug is turned into a certain position, to coincide with the port G and place the main burner in communication with the gas-pipe; but when in another position to coincide with the port H and establish communication between the pilot-burner and the gas-pipe. In order that the supply of gas to the pilot-burner may be maintained during the process of turning-on gas to the main burner for a sufficient time to ensure ignition of the latter, a slight groove is formed from the port I for the required distance around the periphery of the plug.

A port is formed through the casing, so as to extend outwardly, and connected with the pilot-burner, and in the plug is formed a port J so positioned that, during the turning on of the gas to the main burner (during the turning of the plug from the position of coincidence of the ports H and I to the position of coincidence of the ports I and G), the port J will provide an additional supply of gas to the pilot burner, with the result that the flame of the latter will be elongated or flashed.

Packing and Sealing Means for Gasholders with Disc-Shaped Crowns.

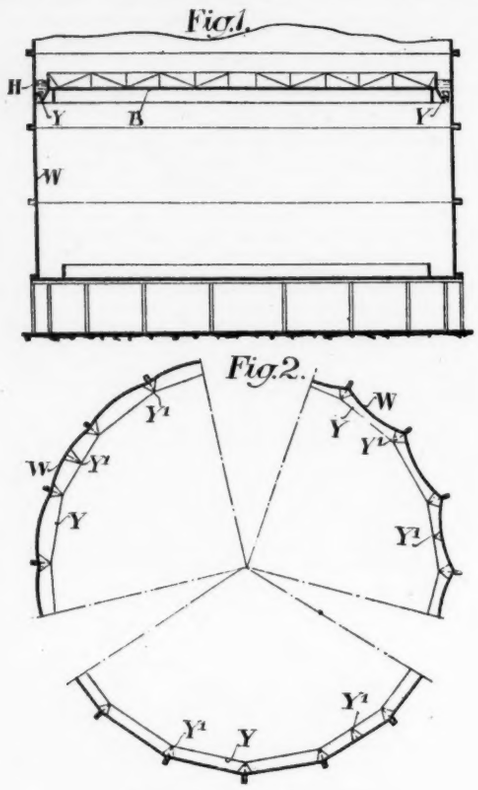
MASCHINENFABRIK AUGSBURG-NÜRNBERG A. G., of Nuremberg, Germany.

No. 16,473; July 10, 1914. Convention date, Feb. 2, 1914.

This invention relates to gasholders of the type described in patent No. 16,184 of 1914 [*ante*, p. 249], and consists in an improvement in the sealing and packing means employed in connection with the liquid seal there described.

When applying the invention described in the earlier applicatton to gasholders of polygonal section, the sealing and packing members Y are (according to this invention) prismatic in shape; and in order to ensure that an efficient joint or seal is obtained between the ends of the members at the vertical edges or corners of the polygonal gas-

holder, wedge-shaped or pyramidal packing and sealing members are inserted between the prismatic packing and the sealing members.



A Modified Nuremberg Holder.

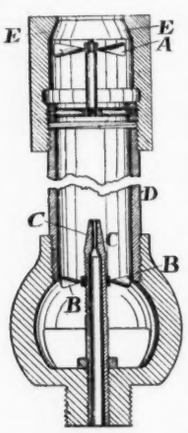
Fig. 1 is a diagrammatic sectional elevation of a holder constructed in accordance with the earlier application to which the present invention is applied. Fig. 2 is a sectional plan view showing the invention applied to three different forms of polygonal holders, in which the different sides of the jacket or shell may either be composed of flat or curved (convex or concave) plates of sheet metal. Between the disc-shaped closing member B and the metal jacket or shell W of the holder, there are arranged in the sealing channel H prismatic sliding-pieces Y similar to those described in the main patent. At the edges there are inserted between every two sliding-pieces Y, a wedge-shaped or pyramidal piece Y^1.

Heating Burners.

HALL, I., of Birmingham.

No. 17,681; July 27, 1914. No. 19,927; Sept. 18, 1914.

This joint invention relates more especially to atmospheric gas-burners of the bunsen type, but is applicable to all burners in which it is desirable that the "fuel" should be efficiently mixed prior to its reaching the end of the burner where combustion takes place.



Hall's Heating Burner.

In carrying the invention into practice as illustrated, the burner is provided with a fan A near the mouth of the burner in combination with a second fan B near the inlet, by which air is admitted to the burner. The latter fan may be rotated by the jet of gas emerging from the gas inlet pipe C—thus "serving to draw in and thoroughly mix the incoming air with the fuel gas." The burner head is adapted to be screwed upon a pipe D, which forms the mixing chamber of an atmospheric burner of the bunsen type.

The lower part of the burner head fits on the pipe; the upper part being plain, and terminating in an inwardly tapering part E, giving a somewhat less area at the point where the fuel issues.

The vane may be of thin sheet metal having radial cuts extending from points equally spaced around its circumference towards its centre—the blades being bent or inclined, and preferably six or eight in number.

The arrangement of the fan A near the combustion point at the end of the burner—either immediately behind a portion of smaller diameter than the general bore of the mixing chamber or in a groove within same—is said not only to mix the gases thoroughly, but also to a large extent prevents lighting-back, and does away with the necessity for employing gauzes in the burner.

The arrangement may be conveniently employed with the gas-burner arrangement described in patent No. 5000 of 1914; and the illustrated form of the gas and air admission member is similar to that described in the earlier specification.

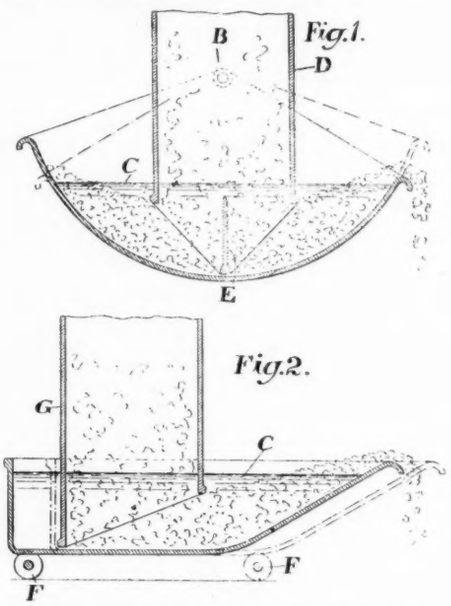
Discharging Continuous Vertical Retorts.

DUCKHAM, A. M'D., of Ashtead, Surrey.

No. 21,191; Oct. 19, 1914.

This invention relates to a method of discharging, through a water seal, a continuously working vertical retort, by "imparting a reciprocating or oscillatory movement to a water-trough which forms the seal and wholly or partially supports the charge of the retort, and in completely or partially preventing the material in the trough from sharing this movement in one direction, so that at each movement some of the material leaves the trough and fresh material descends into the trough."

There are, says the patentee, several manners in which this method may be applied. For instance, the lower end of the retort, or an extension of it, may extend into a water-trough mounted to rock on an axis—there being sufficient room between the end of the retort and the bottom of the trough for the passage of the carbonized material. Beneath the end of the retort there is a stationary plate or the like acting as a scraper in relation to the bottom of the trough. When the trough is oscillated, the carbonized material is carried with it by the movement in one direction and a free space is left between the material and the scraper into which some of the charge in the retort descends; while during the movement in the other direction the scraper prevents the material from moving with the trough, so that some of the material falls over the edge of the latter. By placing the scraper on a line substantially bisecting the discharge opening of the retort, the movement of the trough in each direction becomes effective in discharging the carbonizing material. When the scraper is flush with one side of the retort, in which case it may be an extension of the side or the longer side of an obliquely cut discharge opening, the movement of the trough in one direction only is effective for discharging from the trough. A rectilinear reciprocating movement may be substituted for the oscillatory movement of the trough.



Duckham's Vertical Retort Discharge Trough.

Two forms of the trough into which the lower end of a retort extends, are shown.

In fig. 1, the trough is supported so as to oscillate about the hinge B. D is the lower end of the retort, which extends below the water-seal C. E is a scraper secured to the retort. As the trough is caused to swing to the left (as shown in full lines), the carbonized material is discharged over the right edge; and when the trough is swung to the right (as shown in dotted lines), the material is discharged over the left edge of the trough. Also, at each oscillation some of the charge falls into the trough.

In fig. 2, the trough is adapted to receive a reciprocating motion on the rollers F, instead of an oscillatory motion; and one side G of the retort is extended to act as a scraper. When the trough is moved to the left, some of the carbonized material is discharged over the right edge of the trough, and when to the right some of it will fall from the retort into the trough.

Regulating Temperatures.

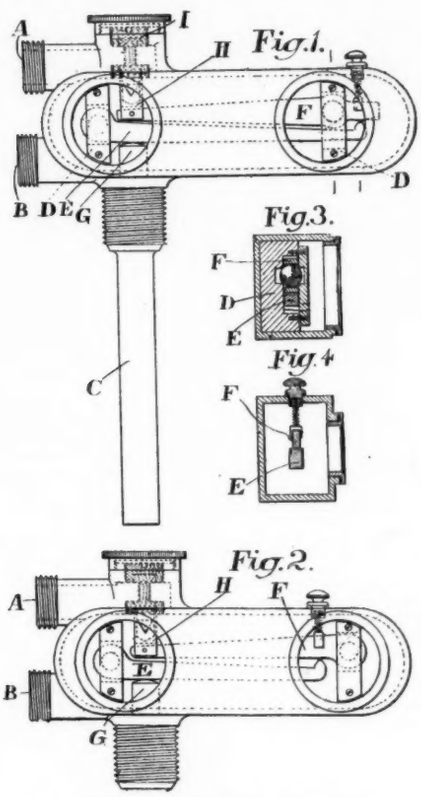
GLOVER, T., of Edmonton.

No. 1927; Feb. 6, 1915.

This invention relates to apparatus for regulating temperatures by determining the flow of gas to burners, of the kind wherein a pair of members having different co-efficients of expansion, and which when exposed to the influence of the temperatures expand at different rates and have action upon a series of levers enclosed within a gas-tight box, to open a valve to determine the flow of gas to the burners. It is characterized in that the levers are supported on ball-bearings, and the gas-tight box enclosing the transmission mechanism is constructed with openings through which the mechanism can be assembled and removed.

Fig. 1 is a side elevation of a complete apparatus with the levers constructed for use when the pair of members having different co-

efficients of expansion are so constructed that the member having the lesser co-efficient of expansion acts upon the levers. Fig. 2 is a side elevation of the complete apparatus with the levers constructed for use when the pair of members having the different co-efficients of expansion are so constructed that the member having the greater co-efficient of expansion acts upon the lever. Fig. 3 is a section on the line A of fig. 2. Fig 4 is a section on the line B.



Glover's Temperature Regulator.

The gas-tight casing shown has two holes formed in one side, and an inlet A connected with the gas supply and an outlet B connected with the burners. From one side or bottom of the casing projects, at right angles, a tube C (having an opening into the casing) provided with a screw thread near its connection with the casing for ready application to a device in which the heat is to be made constant. Walls D are provided, with recessed portions having flat surfaces on which rests the pivotal parts of the two beams E F, provided at their pivoted parts with holes for receiving balls having a bearing on the edges of the holes in the flat surfaces and held in place by plates, screwed to the walls and having a recess or hole on one surface to engage the balls and hold them and the beams in place.

Both walls and plates are positioned approximately in the manner shown, and the beam E is positioned in the casing with its pivotal point near the rod G, which is contained within the tube C; the position of the rod being such that the beam E always rests upon it at a point somewhere near its pivotal point. The other end of the beam is provided with a knife edge.

The beam F is pivotally connected in the same manner to the other wall; but looks in the reverse direction. At its free end it carries the valve H, which works within a casing screwed into an opening in the main casing and preferably in axial line with the tube C. It has cut away portions for a free passage of gas from the inlet A into the main casing, but controlled by the valve H. A screw cap engaging an extension on the casing allows of inspection and actuation of the valve casing to determine its position with regard to the valve H.

Controlling the beam F is a spring having at one end a saddle encircling the beam; the other end being enclosed in the tubular end of a plug screwed into the main casing, and so keeping the spring in place.

When the apparatus is constructed with the tube C of more expansive properties than the rod G, the beam F is provided with an extension positioned beyond the pivot of the beam; and on this extension is a spring which in normal conditions tends to keep the valve H closed—*i.e.*, within the valve casing, the rod being at its lowermost point. But on the contraction of the tube, due to a fall in temperature, the beam E will be lifted and its knife edge will move the beam F to open the valve—the movement being determined by the contraction of the tube C in accordance with the degree of heat. When the tube is of a lesser expansive effect than the rod G, the beams are constructed as at fig. 2—the spring and knife edge being positioned on the outer side of the pivot of the beam F, and in this case the rod G will, on heat being applied, expand to such a degree that it will be caused to rise, and, in consequence, the beam will rise and close the valve I.

Gas-Workers' Strike Settled.—A strike of Clonmel gas workers for increased wages has been settled on the basis of an all-round increase of 2s. per week.

PARLIAMENTARY INTELLIGENCE.

PRICE OF COAL (LIMITATION) ACT.

The Price of Coal (Limitation) Bill was, as announced in last week's "JOURNAL," amended in various respects [the most important addition being the provision made for contracts] during its passage through the House of Commons. The full text of the Act is given below; and the alterations will be seen on comparing this with the terms of the original Bill, which was set out in the issue for the 20th ult. [p. 137].

LIMITATION OF PRICE OF COAL AT THE PIT'S MOUTH.

1.—(1) Coal at the pit's mouth shall not be sold or offered for sale directly or indirectly by the owner of the coal, or on his behalf, at a price exceeding by more than the standard amount per ton the price of coal of the same description, sold in similar quantities, and under similar conditions affecting the sale, at the pit's mouth at the same coal mine on the corresponding date (or as near thereto as, having regard to the course of business, may be practicable) in the twelve months ended the 30th day of June, 1914 (in this Act referred to as the corresponding price).

(2) The standard amount shall be 4s., provided that the Board of Trade may, by order, if they are satisfied, as respects any class of coal mines specified in the order or the coal mines in any district so specified, that, owing to special circumstances affecting those mines, the standard amount of 4s. should be increased, substitute for that amount such higher sum as they may think just in the circumstances; and as respects those mines, this Act shall have effect as if the higher sum so substituted were the standard amount.

(3) If any person sells or offers for sale any coal in contravention of this section, he shall be liable on summary conviction to a fine not exceeding £100 or, at the discretion of the court, to a fine not exceeding treble the amount by which the sum paid, or payable, for any coal sold by him in contravention of this section exceeds the maximum sum which would have been paid or payable for the coal if there had been no contravention of this section. Provided that a person shall not be liable to a fine under this provision if he shows that he had reasonable grounds to believe that he was not committing an offence.

(4) This section shall apply (both as respects the price at which coal is sold or offered for sale and as respects the corresponding price) to a case where the owner of coal at the pit's mouth has sold or offered to sell that coal at a price which includes the cost of railway or other incidental services besides the actual value of the coal at the pit's mouth, as if he had sold or offered to sell it at the pit's mouth at that price reduced by an amount representing the cost of those services.

(5) It is hereby declared that nothing in this section shall affect the rights or obligations of any person under any contract or agreement for the sale of coal except, in cases where the sale is in contravention of this section, as respects so much of the price as exceeds the maximum price which could have been charged for the coal if there had been no contravention of this section.

LIMITATION OF CHARGE FOR WAGGON HIRE.

2.—(1) Where coal is conveyed from the pit's mouth over any railway in trucks not belonging to a railway company, the seller of such coal shall not be entitled to charge for the use of the trucks any sum exceeding by more than 50 per cent. the sum which the railway company conveying the coal was actually charging for the provision of trucks at the commencement of this Act.

(2) If any person charges or attempts to charge for the use of any trucks in contravention of this section, he shall be liable on summary conviction to a fine not exceeding £100.

DECISION OF QUESTION BY THE BOARD OF TRADE.

3.—(1) If in any proceedings any question is raised as to the corresponding price of any coal, or as to the cost of railway or other incidental services, or as to the sums charged for the use or provision of trucks, the court shall refer the question for determination by the Board of Trade, and the decision of the Board shall be final and conclusive for all purposes.

(2) If for any reason there are not adequate data at any coal mine from which to ascertain, in accordance with the foregoing provisions of this Act, the corresponding price at that mine, the Board of Trade may fix that price having regard to data afforded from sales of coal at other mines.

(3) The Board of Trade may require the owner of any coal mine to furnish such information as appears to them necessary for the purpose of carrying into effect this Act; and if any person refuses to furnish any such information when so required, or furnishes information which is false in any material particular, he shall be liable on summary conviction to a fine not exceeding £100.

(4) The Board of Trade Arbitrations, &c., Act, 1874, shall apply as if this Act were a Special Act within the meaning of the first-mentioned Act.

APPLICATION AND DURATION.

4.—(1) This Act shall not apply to any sale of coal for export, or to any sale of coal for the manufacture of patent fuel for export, or to any sale of coal to be used on any ship.

(2) This Act shall not apply to the sale of coal supplied in pursuance of a contract made before the commencement of this Act:

Provided that, where any contract has been made on or after the 1st day of April, 1915, and before the commence-

ment of this Act, for the sale of coal by the owner thereof at the pit's mouth, coal delivered under that contract after the expiration of the period fixed under this provision, and shown to be excepted coal within the meaning of the provision, shall, if the other party to the contract within two months after the commencement of this Act gives notice in writing to that effect to the owner of the coal at the pit's mouth, be deemed for the purposes of this Act to be sold at the time of the delivery thereof.

If, in consequence of this provision, the price to be paid by any person to whom coal is delivered is reduced by any amount, the price to be paid by any person to whom the coal is delivered in pursuance of any subsidiary contract shall be reduced by an equivalent amount; and any purchaser under any such subsidiary contract shall have the same right to give notice to the owner of the coal at the pit's mouth as the person who has made the original contract with that owner, and any person who has sold the coal shall, if required, communicate to the purchaser the name of the person from whom the coal has been bought.

For the purpose of this provision "excepted coal" means coal supplied for domestic or household purposes to any person and coal supplied for any purpose to any local authority, or to any undertakers supplying gas, water, or electricity in any locality in pursuance of authority given by an Act of Parliament, or by an Order confirmed by, or having the effect of, an Act.

The period fixed under this provision shall be a period of three months after the commencement of this Act, but the owner of the coal at the pit's mouth may apply to the Board of Trade for an extension of that period, and the Board of Trade may, if they are satisfied that there are special reasons in the case in question for such an extension, extend the period for such time as they think just under the circumstances, and the period as so extended shall in such a case be the period fixed under this provision.

(3) This Act shall not apply to coal raised in Ireland.

(4) This Act may be cited as the Price of Coal (Limitation) Act, 1915.

(5) This Act shall have effect during the continuance of the present war and a period of six months thereafter.

LEGAL INTELLIGENCE.

LIABILITY FOR ROAD REPAIR.

Gas Company and Urban District Council.

At a recent sitting of the Dartford County Court, before his Honour Judge PARRY, Mr. H. W. Richards, of Crayford Flour Mills, claimed £33 from the South Suburban Gas Company for damage to a motor lorry. The Erith Urban District Council were sued as third parties.

Witnesses stated that the accident occurred at 5.30 in the morning on Feb. 23, when a motor lorry belonging to the plaintiff sank into a recently filled-in trench in Bedonwell Road, Belvedere. A traction engine had to be procured to haul it out. The material with which the trench was filled was so soft that, in trying to jack the lorry out, the jack and plank themselves sank into it. Another van had gone into the same filled-in trench two days before this accident.

Mr. *S. Y. Shoubridge* (the Company's Engineer) said that since the Company took over the West Kent Gas Company, the work of making-up the roads had been undertaken by the Erith Council. His duty was, as soon as the work was finished, to send in a notice to the Council. It was done in this instance; and the ramming and filling work being completed, the Council were responsible for finishing.

His HONOUR gave judgment for the plaintiff for £25 and costs.

Mr. MORETON SMITH (for the Gas Company) then claimed this sum from the Erith Urban District Council, with whom, he said, they had an arrangement to take over the roads. The Council were responsible for the upkeep of the road; and the softness would have been prevented or overcome if it had been properly rolled. At this special spot it should have had particular attention.

Mr. *Shoubridge* said that, after first filling-in, his Company never did any work; and the Council made a charge in this as in other cases. The trench should have been watched in view of the fact that there was an accumulation of water at the spot in very wet weather. The hole in the road caused by the sinking of the lorry had been made-up by the Council.

Mr. *Benjamin R. Green*, late Consulting Engineer to the West Kent Gas Company, gave evidence as to the existence of the agreement with the Erith Council; and correspondence between the Council and the Company was produced.

Mr. SHAKESPEARE (for the Council) said he had not seen this correspondence; and he asked for an adjournment, which was granted.

At the next sitting, the case of the South Suburban Company against the Council was mentioned as having been settled out of Court.

Damages for Injury by Molten Lead.

An award of £25 was made by his Honour Judge Parry, at the Dartford County Court, in a case in which Eva Crane, of Erith, sued (through her next friend) the South Suburban Gas Company for compensation for injuries received to her foot by the overturning of a ladle of lead while she was playing near her house. It was stated that the child, who was six years of age, was with other children at a spot where the Company had a trench open and some molten lead on a fire. The fire was left unattended, and a boy knocked the lead over on to the girl's foot. His Honour held that the Company were guilty of negligence in leaving a fire unattended while children were playing near.

MISCELLANEOUS NEWS.

THE GAS LIGHT AND COKE COMPANY.

The Half-Yearly Ordinary General Meeting of the Proprietors was held on Friday, at the Chief Offices, Horseferry Road, Westminster—Sir CORBET WOODALL, M.Inst.C.E. (the Governor), in the chair.

The SECRETARY (Mr. Henry Rayner) having read the notice convening the meeting, the seal of the Company was affixed to the Register of Proprietors. The report and accounts (the principal portions of which were given in the "JOURNAL" last week) were taken as read.

THE GOVERNOR'S ADDRESS.

The GOVERNOR: Ladies and gentlemen, in order to understand the present position of our Company and find guidance for the future, we must recollect the state of affairs when I last addressed you, and consider the happenings since then. With the uncertainties and perplexities created by the war, anticipation or forecast has been, and is more than usually, difficult. Therefore, while I address myself to what may probably strike nearly all here as the most important feature of the actual position—viz., the increase in the price of gas which has been made since our last meeting, and its necessary consequence in a further reduction of the stockholders' dividend and the co-partnership bonus—I must deal shortly with a rather wide case.

COAL AND THE FORTUNES OF WAR.

The influence of the war upon the whole range of our operations was very early felt, and precautionary measures were taken without loss of time. In September, the first quarter after the declaration of war, we raised the price of gas from 2s. 6d. to 2s. 8d. per 1000 cubic feet, in order, as I have explained, to meet the enormous increase of East Coast coal freights to London, which rose almost at a bound from 3s. to 13s. and more per ton. We were not caught unprepared so far as ordinary provisions could help us. Our coal was bought up to June this year; and its freightage was, as to a large proportion, arranged for. Had the contracts been duly fulfilled, the small increase in the price of gas would have carried us through; but this was not to be. Deliveries fell more and more into arrear, so, powerless to obtain our due supplies, we were constrained to replenish our vanishing stocks by purchasing such coal as we could at extravagant prices, with freights conforming. I am not seeking to put the blame for our trouble on anybody. What happened was the fortune of war. We, at any rate, discovered that it was impossible to carry on business upon ordinary lines, trusting to the making of contracts at the usual time. In March, the outlook had grown very black. Our stocks of coal were reduced to a few days' supply. The first requisite was tonnage to bring home enough coal to go on with; so we bought certain steamships, knowing that with these we should do much more economically than by paying 13s. 6d. to 15s. for outside boats, and 12s. per ton for boats let out by the Government. As I remarked at the time, these rates were sadly inflated, to the detriment of all home coal consumers. This we have proved by our experience in running our own boats. Those we bought during the winter could hardly be called cheap, as might be supposed, either in first cost or in running; yet for the half year the total cost of running them has varied from 4s. 5d. to 3s. 2d. per ton carried, including allowances for interest and depreciation. I need hardly say that the purchase has proved a very advantageous one for the Company. The matter of tonnage being dealt with, there remained the more portentous questions of the probable much higher cost of coal for the period 1915-16, and the certain increase in the cost of all other consumables and materials. The second important raw material of our manufacture is oil. The price of this had already gone up in sympathy with coal, and we knew we should be faced with more demands on war account than we were able to foresee. It was further impossible to take credit for the usual increase in the quantity of gas consumed.

FINANCIAL POSITION AND THE PRICE OF GAS.

A careful estimate of the financial prospect then made showed, as the fundamental data of the actual situation, that of the credit balance of profit and loss which had been accumulated between 1906 and 1912, amounting to close upon £770,000, nearly £400,000 had been re-absorbed up to the end of last year. The estimated deficit, assuming no further increase of revenue, was £450,000 for the year. This eventuality left the Board no alternative. They were reluctantly driven to raise the price of gas to the bare sufficiency, when coupled with the consequent sacrifices by stockholders and co-partners, to square the account—that is to say, the deficit was, apart from other considerations, considerably more than the £450,000; and the increase was supplemented by the saving in dividend and the saving in bonus. Knowing how very heavy would be the loss on the year from June, 1915, to June, 1916, they did not care to reduce the balance in hand by £100,000, which would have happened had no further addition been made to the price. I may point out that this balance forms an important part of the Company's working capital. Any further shrinkage of this cash reserve, therefore, makes a corresponding inroad on the fund out of which we pay our way, which it is our habit to do, very promptly, thereby deriving the customary advantages of the prompt payer, which I am sure you would wish to preserve. This explanation, I trust, sufficiently clears up the situation as presented in March. Perhaps it may be a satisfaction to hear that there eventuated several circumstances pointing to some adjustment and relief of the arduous conditions prevailing at that time.

THE OUTLOOK FOR COAL.

The period under review—and it will be the same with the current half year—has not been saddled with the full burden of war prices, for the reason that, as already stated, the deliveries of coal under pre-war contracts fell into arrear, and have been gradually working off. We now have good—indeed, abundant—stocks of coal at our several works. As the result of Government action in the two respects of regulating exports of coal and limiting the pit-head price, the home supply of this necessary of our industry is rendered more abundant. At the same

time freights have fallen to one-half what they were; while the threat of famine prices has been repressed. True, the authorized increase of 4s. per ton upon last year's pit-head prices will mean to us an increased working expense of about £350,000 a year; but it will bring the satisfaction of showing clearly where we are, so enabling our estimates to be framed with greater confidence.

RESIDUALS AND GAS SALES.

Residuals are improving; but, on the other hand, the sales of gas are down. On the whole, not forgetting that everything we buy is dear, and will probably become dearer, the circumstances of our having not only balanced our revenue account but for the first time in three years added to the amount carried forward, indicates that our policy of caution has met the emergency for the time being. I entertain the hope that the present price of gas may not continue to be necessary for any long period.

THE ACCOUNTS.

The accounts contain many satisfactory elements. The balance of unspent capital is larger; expenditure having been £53,300 and depreciation £97,000. In addition, we have withdrawn £12,000 from the depreciation fund (No. 10) and written-off from capital the value of a holder abandoned some time ago when the Page Street station was discontinued. Increased yield of gas per ton of coal has saved over 40,000 tons, and a consequent expenditure of £39,000. The rental derived from meters and stoves on hire continues to grow, thus proving that gas is still rising in public favour. This entry in our accounts helps to justify the confidence I expressed at our last meeting in the essential permanence in the elements of our affairs which makes for stability and prosperity, and will, in due time, bear fruits of increase.

The output of gas has been adversely affected by the continuation of the official lighting restrictions, which have taken the form of earlier closing of public houses, abolition of outside lights, and a great reduction in the number of public lamps in lighting. These restrictions lead probably to earlier hours being kept generally. The output in consequence shows a decrease of 4·31 per cent. as compared with the quantity sold in the corresponding period of 1914. The gas-rental shows an increase of £130,791, allowing for the decreased output.

The revenue for residual products shows a decrease of £110,617. Except in the case of tar and liquor, where there is a small reduction in the value per gallon, the whole of this reduction is due to the smaller quantity of coal gas manufactured as a result of the decrease in business, and of the substitution during the latter part of the winter of a greater quantity of oil gas for coal gas. Early in the year it became necessary to conserve by all means the coal obtainable; and with this aim the percentage of oil gas was raised from about 25 per cent. to 40 per cent., with the result that much less coke was produced. In the process of manufacturing gas from oil, not only is no coke produced, but a large quantity is actually consumed. The substitution of oil gas for coal gas will be found to colour the whole of the Company's accounts during the half year under review.

On the debit side of the account you will see there has been a decrease of £75,186 in the cost of coal and freight, notwithstanding the fact that there has been an increase in the price of both coal and carriage. This is due to the smaller quantity of coal carbonized. As might be expected, owing to the large increase in the quantity of oil gas manufactured, the cost of oil shows an increase of £20,825.

Dealing now with the Company's working during the half year under review. There has been a decrease in manufactory wages of £8300, due partly to the improved make of gas per ton of coal and partly to the substitution of carburetted water gas for coal gas. There is a decrease of £9700 under co-partnership—the bonus, owing to the rise in the price of gas, being at the rate of 3¾ per cent. instead of 5 per cent. Of this 3¾ per cent., it is gratifying to know that the co-partners have voluntarily set aside 1¼ per cent. towards the war distress fund which has been instituted by the employees for helping the relations of men who may unfortunately fall during the war, or assisting in cases where men are incapacitated for further work. [Hear, hear.] This sum amounts to £11,520, and is administered by a Committee of the employees of the Company.

Distribution of gas shows a net reduction in cost of £9664. Under the heading of law and parliamentary, there has been a decrease of £2977, as the Company have incurred practically no expenditure on parliamentary work during the half year. Bad debts show an increase of £2037. Last year was the lowest on record since 1905. We have not been able to live-up to this high level, chiefly owing to the number of consumers who are suffering from the effects of the war. Workmen's compensation shows a decrease of £1695, which is satisfactory from the point of view of both the employees and the Company.

EMPLOYEES AND THE WAR.

The Directors are continuing the Company's allowances to their employees on active service who have dependants. These allowances amount to £7000 for the half year. There are now 2200 men serving with His Majesty's Forces, and I regret to say that there have been a good many casualties, more especially in the regiment which the Company's men have so largely joined—viz., "The Rangers"—which has distinguished itself greatly in France. I am sure it will be the wish of the shareholders to convey their sincere sympathies to the relatives of those men who have fallen fighting so gallantly. [Hear, hear.] There has been a decrease in cost of National Insurance for the half year of £643. This small reduction is due to the fact that the contributions of those employees on Active Service are now paid by the Government.

INVESTMENTS AND THE WAR LOAN.

Among their investments, the Company have a sum of £221,000 Consols standing to their credit at a book value of 75 per cent. In view of the depreciation they have suffered, it was thought wise to write them down to 66⅔—the figure at which, on conditions, they can be converted into the new War Loan. This writing-down has cost some £18,000. With the assistance of the Company's bankers, arrangements have been made to convert the net amount into War Loan, and the result will be a considerable increase in the yield of interest on this investment. While on this subject of the new War Loan, I may say that the Directors have taken steps to enable the Company's employees to obtain small allotments of the loan on an instalment system; and it is satisfactory to be able to state that a large and increasing number of men are availing themselves of the facilities offered them. [Hear, hear.]

DIVISIBLE PROFIT.

The financial result of the half year is that, after providing for fixed charges, and setting aside £5000 towards the redemption fund, there remains a profit balance of £395,050 13s. 11d. The amount brought forward from the previous half year being £384,538 3s. 10d., there is a total available balance of £779,588 17s. 9d., out of which the Directors recommend the payment of a dividend upon the ordinary stock at the rate of £4 4s. per cent. per annum, which will absorb £343,501 6s. 1d. That the Company's business is still going forward is proved by the fact that there has been an increase of 1679 in the number of consumers during the last half year, and of 16,600 in the number of gas-stoves sold and let on hire.

LOSS OF THE S.S. "FULGENS."

Since these notes were written, we have heard of the loss of our good ship "Fulgens," which was torpedoed by a German submarine off the Norfolk coast. Fortunately, all the members of the crew were saved, though one was seriously injured. This is a grave loss to us. The "Fulgens" was an admirable ship, and carried for us about 200,000 tons of coal annually. She was, of course, insured, as was also her cargo. That the war is being conducted by the enemy on cowardly and contemptible lines, all the world knows. In this case, although no warning was given, and no effort made to help the crew, we have no more right to complain than very many others who have fared likewise.

WAR MUNITIONS.

The manufacture of materials for high explosives is proceeding satisfactorily and in increasing quantities at most of our stations. The Directors have also placed at the disposition of the Munitions Committee a number of workshops and tools for the manufacture of shells; and our mechanics are taking up the work with enthusiasm. Here, again, we find that men incapable themselves of bearing arms can yet serve the country well and aid our fighting men to bring the war to a victorious close. We are not only making shells, and the charges for them, but we, and companies like ours, are maintaining an industry of the greatest importance to the nation, and which contributes in no small measure to the vast sum which the war demands.

ADOPTION OF THE REPORT AND ACCOUNTS.

The GOVERNOR: I have pleasure in moving:

> "That this meeting do agree with, and confirm, the report of the Directors and the Auditors' report and statement of the accounts of the Company as transmitted to the proprietors on the 29th ult."

Before putting the resolution to the meeting, I shall be happy to hear any remarks which proprietors may wish to make and to endeavour to answer any questions they may ask.

The DEPUTY-GOVERNOR (Mr. John Miles): I beg to second the motion.

The GOVERNOR: As no one has any observations to make, I will put the resolution to the meeting.

The motion was put, and carried unanimously.

THE DIVIDEND.

The GOVERNOR: I will now ask the Secretary to read the minute with regard to the dividend.

The SECRETARY read from the Directors' minutes the following:—

> Resolved: That it be recommended to the half-yearly ordinary general meeting of proprietors to be held on the 6th prox.:
>
> (1) That dividends as follows for the half year ending the 30th June last be declared—viz.:
>
> On the 4 per cent. consolidated preference stock at the rate of £4 per cent. per annum;
>
> On the 3½ per cent. maximum stock at the rate of £3 10s. per cent. per annum;
>
> subject to deduction of income-tax.
>
> (2) That, out of the divisible profits for the said half year remaining after the payment of the foregoing dividends, the sum of £5000 be set aside towards the redemption fund, in accordance with the provisions of the Company's Act of 1903.
>
> (3) That, out of the balance of divisible profits amounting to £779,588 17s. 9d., and applicable to dividend on the ordinary stock, the sum of £343,530 6s. 1d. be set apart for the payment of dividend for the said half year on the ordinary stock of the Company, and that such sum be appropriated in payment to the proprietors of ordinary stock of a dividend for the said half year at the rate of £4 4s. per cent. per annum, subject to deduction of income-tax, and in payment of forfeitures incurred, amounting to £29.

The GOVERNOR: I have much pleasure in moving the resolution.

The DEPUTY-GOVERNOR seconded the motion, and it was carried unanimously.

The GOVERNOR: That completes the business of this morning.

VOTES OF THANKS.

Mr. THOMAS GARDNER said he felt sure the shareholders would not like to part without thanking the Governor, Directors, officers, and staff of the Company for the great services which they had rendered during the most trying half year through which they had lately passed. After listening to the very interesting and clear speech of the Governor, he felt perfectly certain that everyone connected with the Company must have had an exceedingly anxious time; and he feared they must still look forward with some anxiety to the future. They were all pleased to hear the Governor express a hope that it might not be necessary to continue the high price of gas. He trusted that this would be so, in which event they might look forward to a slightly increased dividend. Whether this was so or not, he was sure he voiced the feelings of all present in saying it was a source of satisfaction to them that the management was in such experienced and capable hands, and that they could look forward to the wise management of the Company in future. He moved that a hearty vote of thanks be accorded

to the Governor, the Directors, officers, and staff of the Company for the valuable services rendered during the past half year.

Mr. W. Brown, in seconding, said the mover of the resolution had made an exhaustive speech; but as he (the speaker) had come a long way to the meeting, he might be allowed to say that he was very pleased with the speech which the Governor had made, and the speech made in eulogy of the able management of the Company. It was very nice to attend the meeting and hear that in these critical times their interests had been so well looked after, and that they could look forward with confidence to the future.

Mr. W. Dunkley supported the motion, and suggested that notice should be taken of the patriotic action of the Directors in allowing the men to go to the Front and for the care which was being taken of their families. The Board had done what he was sure the shareholders would approve. Therefore he suggested the addition to the resolution.

Mr. Gardner said he should be very glad to incorporate the suggestion in his motion.

The resolution was unanimously adopted.

The Governor's Reply.

The Governor: Mr. Gardner, ladies, and gentlemen, we have been used to votes of thanks for a good many years now; but I do not think that ever in the history of the Company did a vote come with more satisfaction to those who sit on this side of the table than it does on the present occasion. We have gone through the most anxious and trying times that have ever fallen to the lot of this Board; and the result of it has been felt most keenly, as we were all of one mind in our desire to avoid an increase in the price of gas. To have to do this was to us a very painful necessity. But to find to-day in this large gathering of shareholders that there is not a word of disapproval of the action of the Board, but evidently a feeling of approval, is a great help. Mr. Gardner spoke of the anxieties of the Board. I can assure you our greatest anxiety is to hasten the time when the increase in price will be diminished, if not wiped out. The honourable proprietor on my left, who spoke about the patriotic action of the Board, has not forgotten the fact that he is responsible, as you all are, for that action. because on the last occasion you approved the action of the Directors. As the vote includes the officers, staff, and workmen, I may repeat what I have said already—that the mechanics are looking forward with enthusiasm to taking their part (which must be done in hours after the day's work is finished) in helping the War Department in its work. With all the staff there is a spirit of contentment and a desire to do the best they can. For the staff it has been as trying a time as it has been to the Directors during the past six months, and every one has risen in the most excellent manner to the needs of the occasion.

Reply on Behalf of the Staff.

Mr. D. Milne Watson (the General Manager), on behalf of the staff, thanked the meeting for the kind manner in which they had passed the vote of thanks.

COMMERCIAL GAS COMPANY.

The Half-Yearly Meeting of the Company was held last Thursday, at the Cannon Street Hotel, E.C.—Mr. W. G. Bradshaw in the chair.

The Secretary (Mr. F. J. Bradfield) read the notice convening the meeting; and the Directors' report and the statement of accounts were taken as read.

Difficulties and Anxieties of War Times.

The Chairman: Ladies and gentlemen, I have to move—"That the report and accounts now submitted be received and adopted, and entered upon the minutes." The period covered by the report and accounts which we now present to you is the second half year under war conditions. Therefore you will understand that we have had to meet many unusual difficulties and hindrances in our working, such as a reduced staff, shortage of labour, delays of transport, extra wages and allowances to our employees, and an increase in the cost of nearly all the materials we use in making gas, including coal and oil. Yet, I think, if you have studied the accounts, you will agree with me that the results are better than might have been expected, and they certainly are not unfavourable.

Lowest Price of the Three London Companies.

The feature of the half year is the fact that, in common with other companies, we have had to raise the price of gas—not, we are happy to say, to an extent which could damage the trade of the district or inflict serious hardship on the consumers. But still it is always a grief to the Board when we have to raise the price of gas at all. As you have seen, we had to increase the price from 2s. 4d. per 1000 cubic feet to 2s. 8d. as from the Lady-day quarter; and this means a reduction in dividend at the rate of 10s. 8d. per cent. on the 4 per cent. stock and 13s. 4d. per cent. on the 3½ per cent. stock, and a loss of bonus to the workmen, under the profit-sharing scheme, of 2 per cent. on the wages. In this way, we all—stockholders, consumers, and employees—share the burden of the times in which we live. We are not alone in having to raise the price of gas. The Gaslight and Coke Company have had to increase their price by 8d., to 3s. per 1000 cubic feet; and the South Metropolitan Company have raised their price first by 2d., and then by 6d., to 2s. 10d. per 1000 cubic feet. Only having to raise our price 4d. has brought about the abnormal position that we are now selling gas cheaper than any of the three Metropolitan Companies.

The Value of Ship-Owning.

This is due to the fact that we possess our own ships; and therefore we have not been penalized to the same extent as other companies by the extraordinary rise in freights from the North which took place at the end of last year and the beginning of this. You will remember perhaps that, at our last meeting, I explained to you that freights from the Tyne to the Thames which normally stand at about 3s. per ton, rose to 13s. 6d. per ton; and I believe 14s. was actually paid. Even now when the Government have done something to alleviate the situation, one cannot charter a ship to bring coals from Newcastle to London under 7s. or 7s. 6d. per ton. Although we have our own ships, and have benefited largely by this, yet they have not been running nearly so efficiently and economically as in other days, because the boats are subjected to all sorts of delays, arising from Admiralty regulations, the putting out of lights in the North Sea, and so forth. Nevertheless, the cost of bringing coal from the North, I am happy to say, has only gone up to us by 1s. 4d. per ton above the price at which it stood this time last year—that is, the first six months of 1914—when we were working under peace conditions. I think that this is a very remarkable and satisfactory fact; and it is in spite of our having chartered three extra steamers at a high market rate so as to improve our stock of coal, which was very much depleted at the end of the winter. No doubt you have seen from the capital account that the high freights have induced us to purchase another steamer. The four we had were not in ordinary times sufficient to bring the whole of our requirements to London; and so we used to rely upon being able to charter ships at cheap rates. This was very well then. But now that freights have gone up so much, we decided that we must get another steamer, so that we might be able to carry all our supplies. After some considerable difficulty, we found a steamer of about 900 tons burthen, which is the largest size which will lie alongside our wharf at Wapping. She has been connected with the west coast coal trade, and has proved quite suited to our needs. Of course, we had to pay considerably more for her than we should have paid in peace times; but we have done what I think was a proper thing—we have written-down the cost of the ship to her value under ordinary conditions. That is the price at which she stands in our books to-day; and I am glad to be able to say that, before the year is out, we shall have about saved the cost of writing-down the ship. We have now more than sufficient shipping to carry all our requirements in the way of coals; and this will enable our Engineer to increase and to maintain our coal stock. Although, as I say, the stock was much depleted at the end of last winter, we have succeeded in getting it up to the normal amount at this time of the year; and we are straining every nerve to begin the winter with a much larger supply than usual. Of course, although our ships render us independent of the high market rates for freights, still we have to face the anxiety of the perils of the North Sea, and all the delays and hindrances which come from the condition of war. It is reassuring that the Government have at last taken steps to put restrictions on the export of coal and coke. You will have noticed from yesterday's "Times" that the exportation of coal and coke will be prohibited as from Aug. 13 to all destinations abroad, except British Possessions and Protectorates, other than by licence of the Board of Trade.

Raw Materials and Residuals.

Another cause which forced us to raise the price of gas was the increase, which I have previously mentioned, of the prices of raw materials. This increase was not offset, as is usually the case, by an enhanced return from the sales of residuals. If you compare the amounts received from residual products in the past half year with those realized in the corresponding half of 1914, you will see that in the past half year we actually obtained £370 less. Coke gave us more by £1969; but this does not represent the true market value of coke. I believe I mentioned the last time we had the pleasure of meeting you that our principal coke contracts fell due for renewal before the large rise in price took place, so we are not deriving the full value of the rise in market value at the present time. Tar and sulphate of ammonia sold at lower prices, and yielded £2411 less. Still the prospects for the residuals markets are very good. Coke has risen in price; and the demand for it is greater than we can comply with. Both tar and sulphate are also now selling at good prices.

War Allowances.

Another reason for the necessity of raising the price of gas is the special war allowance, owing to the increased cost of living, to our employees earning less than a certain amount. It is a vital necessity of our business that we should keep our workpeople contented and happy; and this, I am glad to say, we succeed in doing. The special war allowance amounts to 4s. a week and downwards according to the circumstances of the workman, and the number of those dependent on his earnings. I may say that the seamen and firemen on our ships are now receiving double the wages they were getting prior to the war. The extra cost to the Company of these allowances during the half year was £4577, of which the crews of the ships received £2065. In addition, we have also given a proportion of their salaries and wages to those members of our staff and the workmen employees who have joined His Majesty's forces; and this has cost £1797 in the half year. So that, under these two heads, we have had to spend £6375 in the six months over and above our usual requirements. Beyond this, the depletion of our staff has added considerably to the difficulties of carrying on our business.

New Contracts—Coal Prices Limitation Act.

Since we met you in February last, we have completed the new annual contracts for the purchase of coal and oil, and you will not be surprised to hear at a greatly increased cost, and this in spite of the fact that we were in the market before the principal increase in prices took place. Our coals have cost no less than 3s. 1d. per ton, f.o.b. in the North, more than in the preceding year; and this represents an extra charge of about £30,000. Oil (of which we use between 2½ and 3 million gallons a year) has cost us ¾d. per gallon more; and this is equivalent to something like £9000. These two items therefore amount to £39,000. From the figures I have given you I think you will see that the rise in the price of gas was forced upon us. I should like to point out that during the half year to June last, we were working under our old contracts; and therefore the coal and oil used was at the lower rates, so that the present accounts do not show any sign of the rise. You are probably all acquainted with the provisions of the Price of Coal (Limitation) Act, which fixes the price of coal at the pit mouth (subject to certain exceptions) at not more than 4s. per ton above the

price of similar coal sold under similar conditions in the twelve months ending June 30, 1914. Of course, some such measure and regulation were absolutely necessary in order to keep down the price of coal. But I cannot help feeling that the Act gives the coalowner a liberal margin of profit; and I am afraid one result will be to level-up the price of coal to the maximum fixed by the Act.

INCREASED CONSUMPTION AND CONNECTIONS.

One very satisfactory feature of the half year is that, in spite of all the restrictions placed on public lighting, our business has increased in volume. We have sold 38½ million cubic feet more gas during the half year than in the corresponding period of 1914, which is equivalent to an increase of 2¼ per cent. on our business. We have connected-up 81 new ordinary consumers, 695 new prepayment consumers, and a rather larger number than usual of stoves—2922. This increase is largely due to the industrial activity in our neighbourhood, and to the high price charged for coal for domestic use, which has driven the small buyer of coal to consume gas instead of coal.

HELPING THE COUNTRY.

Now you will like to know what we are doing to help our country in this hour of need. Tar is, as you know, one of the principal bye-products of the carbonization of coal; and tar in the hands of the chemist is a regular Pandora's box, full of valuable substances—such as ammonia, benzol, toluene, naphtha, carbolic acid, cresylic acid, creosote, anthracene, naphthalene, pitch, and some other things which I do not recollect. These substances in the hands of the chemist are converted into other substances. For instance, carbolic acid treated with nitric acid forms picric acid, which is an ingredient in the manufacture of high explosives. Toluene becomes toluol, which is the basis of trinitrotoluol; and this is one of the most powerful explosives known. You will see from this that it is of vital importance that the Government of the country should have as much toluol as is needed. Now Mr. Charles Carpenter, D.Sc., the able Chairman of the South Metropolitan Gas Company, invented a very simple process, whereby the amount of toluene in the tar could be enlarged twelve to fourteen times. We have installed the process at our works; and we are now supplying with this enriched tar the tar distillers who extract the toluene. This is one way in which we are helping the Government. We have also taken steps to supply the Government with concentrated sulphuric acid which is another ingredient in the manufacture of explosives; and as soon as we get the necessary machinery, we are going to commence the manufacture of fuses for shells. Beyond this we have released our able Assistant Engineer, Mr. Gill, from some part of his duties to the Company, in order that he may become District-Manager to the Munitions Committee; and he is doing splendid service in organizing the East-end of London for the production of munitions of war. Then our Chief Engineer (Mr. Stanley H. Jones) has instituted classes for the instruction in mechanics of our staff and others after business hours, in order that they may be able to take the place of those mechanics who are called away on the country's service, or at any rate help those left behind. In these and other ways, we are doing all we can to assist our country at this crisis.

DEPRECIATION OF INVESTMENTS.

There is one matter I think I ought to bring before you. You are, of course, aware that the war has depreciated the value of nearly all securities; and our investments, which represent our insurance fund and in part our reserve fund, have, being all gilt-edged, suffered severely. We have taken steps to convert the small amount of Consols we hold into the new War Loan; and we have under consideration the writing-down of the remaining investments to their respective minimum prices.

FEATURES OF THE ACCOUNTS.

Now if you turn to the accounts for one minute, I will give you a bird's eye view of the financial aspects of the half year. I have already alluded to the purchase of another ship; and the happy results in economy and efficiency which have followed from this. I have alluded to the fact of the large number of stoves which we have fixed during the half year. Now if you turn to the revenue account, you will see, by comparison with the first half of last year, that gas gave us £13,527 more, due to the higher price, which was only charged the last three months, which, being summer months, gave the additional revenue over a comparatively small consumption of gas. Extra profit was also obtained because we sold 38 million cubic feet more gas. Then meter-rents yielded an additional £1841. Residuals produced £370 less; and miscellaneous receipts were £95 less. Therefore, altogether, we have a net increase in income of £14,903. On the expenditure side of the account, we have spent more by only £1689; so that our profit is £13,214 more than this time last year. On that occasion we were £13,949 short of our statutory dividend and interest. This half year, after paying interest and dividend (which I may remind you is £5900 less than it was for the corresponding half year, owing to the increase in the price of gas), we shall increase the surplus by £4374. I think this is satisfactory under the conditions prevailing.

IN THE COUNTRY'S SERVICE.

Now, before I sit down, I should like to say that nearly 200 of our employees have joined His Majesty's forces, and already five have laid down their lives in their country's service. I am sure we shall ever hold their memories in gratitude and honour; and our heartfelt sympathy is with their bereaved relatives.

WILLING WORK.

Our workmen have done extremely well. The Engineer informs us that the work has been excellent in every way, and that our relationships with the men have been all that could be desired. They have continued the very trying work of guarding our stations by night as well as by day. This work has been done very satisfactorily; and it has involved the loss of a good many nights' rest. This sacrifice, however, has been cheerfully borne. Of course, when the price of gas was raised, we had to alter the whole of our coin-meters, so that they would pass a less quantity of gas per penny. This involved dealing with more than 90,000 meters; but the work was done in a very few weeks, and at very small cost—only 2½d. per meter. I mention this because I think it reflects the greatest credit on the outdoor staff.

KNOWN FACTORS AND THE FUTURE.

During the current half year, we are paying for our coal and oil an increased price under the new contracts. Although we may look for a better return from our residual products than during the last six months, still we must expect reduced profits. Our chief anxiety as we look forward is the supply of coal during the winter months. But I have explained to you what we have done to meet this; and I think you will agree with me that we have taken all steps in our power to ensure the maintenance of the supply. In these times I dare not prophesy; but I may express the hope that nothing will interfere with the continued prosperity of the Company.

The DEPUTY-CHAIRMAN (Mr. H. E. Jones) seconded the motion.

Mr. GEORGE ENNIS said there was only one point in the Chairman's observations to which he wished to allude—that was, the proposal to write-down the reserve fund to the present depreciated value of the investments. To his mind, in very many cases this was a great mistake. He mentioned this now because the Board had not yet done what they proposed to do. Their reserve fund was something like £75,000; and he thought it would be better to put the words "at cost" against the investments, and place against that the depreciation. In his opinion, this was the most reasonable way to treat the matter, as then they did not lose sight of the cost of the reserve. He congratulated the Directors generally upon the way in which they had fought the Company's battle through the war times. They had presented an admirable account—one which was satisfactory to the proprietors in every possible way. Not only the Directors, but the staff deserved to be complimented upon the manner they had fought a way for the Company through this very difficult period.

The CHAIRMAN thanked Mr. Ennis for his remarks. With regard to the writing-down of the investments, he (the Chairman) had said what he did in his speech because he rather thought that Sir Alfred Bateman, the Official Auditor, wished him to do so. The whole thing was as broad as it was long. As the proprietors knew, the Directors had in past years written-down the investments; and they would bear in mind what Mr. Ennis had said.

Mr. ENNIS: The reverse operation is very difficult now.

The CHAIRMAN: The reverse is never done.

The motion was unanimously passed.

THE DIVIDENDS.

Moved by the CHAIRMAN, and seconded by the DEPUTY-CHAIRMAN, the statutory dividends were declared at the rates of £4 18s. 8d. per cent. per annum upon the 4 per cent. stock, and of £4 13s. 4d. per cent. per annum upon the 3½ per cent. stock, both less income-tax, and payable on Aug. 16.

VOTES OF THANKS.

Mr. ENNIS moved a vote of thanks to the Chairman and Directors for their conduct of the affairs of the Company during a very trying half year.

Mr. M'NAUGHT seconded the motion.

The CHAIRMAN heartily thanked the proprietors for their vote, assuring them that his colleagues and himself did not look upon this acknowledgment as a formal thing. They valued the good opinion of the proprietors, and appreciated their thanks half year by half year. Might he now pay honour to those to whom honour was especially due, by moving a vote of thanks to their officers, the staff, and the employees. He had already alluded to the good work done by their employees. He had, in company with one of his colleagues, the pleasure of meeting the Profit-Sharing Committee the previous week, together with the chief officers of the Company, and they had a very pleasant meeting. Of course, all present were aware that the war had brought extraordinary prosperity to the working classes of the country. Work was plentiful, and wages were high. But what was going to happen after the war was over? He feared that then work would not be as plentiful, nor would wages be as high. So while all was pleasant and easy now, he for one anticipated that they would have economic troubles in future. The Directors would then find the need of what they had now; and they believed they would then have a full continuance of the mutual confidence between employers and employees. He should like to specially mention the officers and staff of the Company, because they had been working short-handed. They had had many extra difficulties and anxieties; and they had faced them with courage and patience. They owed to them not only a vote of thanks, but sympathy in their difficulties, and the assurance that Directors and proprietors stood behind them through thick and thin.

IMPORTANCE OF THE GAS INDUSTRY IN THE WAR.

The DEPUTY-CHAIRMAN, in seconding, said he could not pass by this motion in silence. This had been a time of hard work and anxiety for the Directors, and especially had it been a time of harassing work for the officers and their staffs. They had brought the trading of the Company, under all the difficulties and extraordinary circumstances, to a good conclusion. If the proprietors noticed what fell from the Chairman, they would have observed that the Company had now accomplished that which was his proud aim for many years when he was the Company's Chief Engineer—that was, to supply gas at the lowest price of any of the three Metropolitan Gas Companies. When the proprietors remembered that this was the smallest of the three Companies, and that two of the Company's works were remote from the river traffic, they would realize that this was indeed a very proud position, and reflected great credit upon the staff. The Chairman had alluded to the future, and gave him the key to say something that he wanted to say. This war, great adversity as it was, had taught many people some very important things in connection with gas. The Chairman had touched on the great importance of gas-works products in the manufacture of explosives. Not only was the highest explosive of all, "T.N.T.," to be got only from gas-works, or works carbonizing coal, unless it was by a very complicated and almost commercially impracticable system of synthetically building-up, but they made also the lower explosives—phenol and picric acid. They had also a great demand for sulphuric acid, which was obtained from one of the

impurities removed from gas. From this the acid could be made very free from arsenic, while that made from the pyrites deposits of Spain contained arsenic in considerable quantity. But a good deal of this bad acid had been made, and much injury had been done by its use. These were some of the ways in which gas had helped in the war. The war had also taught the consumers of gas how to avoid the high prices of coal by turning a little more gas into their domestic arrangements—into their cooking-stoves and other appliances which the Company let out to them. The Company had no less than 75,000 working men consumers, who wanted cheap gas; and they also had a large number of manufacturers in their area. The war had taught the manufacturers, and even their friends the electric light people, the enormous advantage of having a good supply of coke in their midst. Coke, as he had said somewhere else, was not produced purposely to make a profit, but they perforce had to produce it so long as they made gas. This was very important to the users of solid fuel. Not less important was the realization of the fact by the Government authorities that it was wise to give gas companies as much coal as they wanted at a reasonable price, because naturally, under the sliding-scale, the greater part of all that was saved by the reduction of the price of coal went directly into the pockets of the poor consumers of gas. It had been calculated by the "JOURNAL OF GAS LIGHTING" that £828,843 a year—nearly 1 million of money—was the additional cost that fell upon the consumers of gas supplied by statutory undertakings by an increase of 1d. per 1000 cubic feet; and this was practically what every increase of 1s. per ton on the price of coal represented to the consumers. It was really due to the gas interests who had been hammering away at the authorities, and to the convincing case put forward by the gas and electric light people, and other large buyers of coal for public services, that the Government were bound, and were led, to restrict the export of coal, and so enable their own community to be properly served. It was a matter of great interest that, in the recent debate on coal prices, the President of the Board of Trade (Mr. Runciman), in speaking about the position of gas companies in relation to the price of coal, pointed out to the House that any savings that they could effect went in greatest part to the public represented by the consumers of gas. It was a fine thing for a Government authority to have learned this, because he (Mr. Jones), in giving evidence before many Parliamentary Committees, had found it difficult to get the members to really understand the operation of the sliding-scale, under which, if the price of coal were raised unduly, the coalowners simply made gas undertakings the collectors of the extra tax put upon the consumers of gas.

The motion was heartily agreed to.

Mr. STANLEY H. JONES (Engineer and General Manager), on behalf of the engineering and managing staff, thanked the proprietors for the kind recognition that had been made regarding their services. The half year had been a very stressful one for the staff of any gas undertaking. He knew of cases where officers had physically broken down through the strain; but he was happy to say that the staff of the Commercial Gas Company happened to be a rather young and sturdy one; and he thought they would be able to face the thing through, so long as it was necessary. Special thanks were due to the men who ran the Company's steamers through those long dark nights of last winter, with all sorts of natural as well as artificial dangers facing them. What they had done had been simply splendid. Merely as an example of the risks run by the mercantile service, he might mention that they had heard only this week of their big neighbour, the Gas Light and Coke Company, losing one of their colliers—the *Fulgens*. He thought it was only right he should put on record the debt of gratitude the Company owed to their seamen. The staff of the Company had also done well. Their brilliant Assistant Engineer was not only doing a lot of work for the Company, but for the country. As the Chairman had remarked, Mr. Gill was a most able and zealous Assistant; and the Munitions Committee would find him equally so. Their indefatigable Secretary would speak for himself; but he (Mr. Jones) could not say anything too good of him. The whole staff of workmen also merited the thanks of the proprietors.

Mr. BRADFIELD, on behalf of the clerical staff, said he had much pleasure in acknowledging the vote of confidence, although in these trying and anxious times, one hesitated to take any credit for anything done except in the service of the country; for it was a matter of great regret to those of them who, through age, infirmities, or responsibilities, were unable to give such services. Mr. Stanley Jones had referred to him, and he should like to thank him, and at the same time tell the proprietors that he had never met a man with so much consideration for his assistants as Mr. Jones. He was a charming man with whom to work. He might mention that the various Societies for the employees were all very flourishing; and they were enjoying a period of excellent health throughout the works. The Chairman had referred to the five losses sustained at the front. It was an interesting, though melancholy, coincidence that, of these five men, one went from the Poplar works, one from the Wapping works, one from the Stepney works, one from the engineering staff, and one from the clerical staff. So that all stations and departments had given one life in the service of the country.

Charges for Public Lighting at Totnes.—In considering the question of the lighting of the streets in the ensuing year, the Lighting Committee of the Totnes Town Council invited tenders from the Gas Company on certain alternative bases, and recommended the acceptance of a charge or £2 10s. 6d. per lamp—the Company to start extinguishing the lights at 10.30 p.m., instead of the former time of 11 p.m. A condition of the offer was that, if an order is made by the naval or military authorities for reducing the lighting, a fair allowance is to be made by the Company. The Mayor (Mr. Windeatt) said the charge proposed was 2s. 6d. per lamp more than under the old contract, and there were 119 lamps. Seeing that for a considerable time there had been practically no lights at all, he thought they would do better by accepting a tender of £2 9s. per lamp, with none of the lamps lighted from May 15 to Aug. 15; the hour of extinguishing to be 10.30 p.m. If it became necessary to light the lamps between May and August, they could arrange with the Gas Company. It was decided to act upon the Mayor's suggestion.

BRENTFORD GAS COMPANY.

The Half-Yearly General Meeting of the Company was held last Friday, at the St. Ermins Hotel, Caxton Street, Westminster, S.W.—Mr. R. J. NEVILLE NEVILLE, M P., in the chair.

The SECRETARY (Mr. John T. Croxford) read the notice convening the meeting; and the Directors' report and the statement of accounts (some particulars from which were given in the "JOURNAL" last week, p. 253) were taken as read.

THE CHAIRMAN'S SPEECH.

The CHAIRMAN, in moving the adoption of the report and accounts, said this was an extremely important meeting; and the report presented several features which were novel to most of the proprietors. Probably it also presented a more favourable character than anybody this time last year, or even six months ago, could possibly have foreseen. The report, however, was not quite comparable with any report the proprietors had had before, owing to the fact that since January of this year it incorporated the accounts of the two Companies which were amalgamated with the Brentford Company on Jan. 1 last—the Staines and Egham Gas Company and the Sunbury Gas Company. In the accounts, for the purpose of comparison, they had added the figures of the two Companies to the Brentford figures for the corresponding half year, so as to make the best comparison possible. The accounts were not, however, comparable for another reason—that the Staines and Egham Company were in the habit of making up their accounts to September. Therefore, in the present accounts, they had had to allow for this discrepancy.

ANNUAL ACCOUNTS AND MEETINGS.

Before discussing the accounts, he should like to say that the experience of their Company, and of a great many other gas companies, showed that it was very difficult indeed to form any accurate opinion as to the state of the accounts by the half-yearly system. Of course, the proprietors all knew that one portion of the year had a very much larger consumption of gas than another—for instance, the June half year was a lighter one than the winter half year; and the result of this was that the June half was always much better than the December half. One reason for this was that their Company depended to a very large extent upon the automatic meter consumers. In the old Brentford district, 90 per cent. of the houses using gas did so through prepayment meters. The automatic meter collections did not take place at any particular time, as was the case with the ordinary consumers. It went on *de die in diem;* and the money was collected from the meters on an average once every six weeks. The result of this was that after Dec. 31 there were three weeks' money collected, which amounted to an infinitely larger sum than the three weeks' collection made after June 30. Therefore the June half year was a better one than the December half. For this reason alone—and there were others—they did not get a fair view of the position of the Company by looking at it merely half year by half year. They nearly always had a good surplus at the end of the June half year; but they did not always make their dividend in the half year ending Dec. 31, although it was seldom indeed in the twenty years he had been a Director of the Company that, taking the two half years together, the Company had not a very reasonable surplus. He therefore thought it would be a good thing for the Company if there was only a yearly report and an interim dividend. The annual account would enable them to understand the situation of the Company much better than it was possible to comprehend it under the half-yearly account system.

A GOOD ACCOUNT UNDER WAR CONDITIONS.

Looking at the present accounts, he did not think there was any gas company in England which had accounts comparable with theirs. This was the only company in London that had not increased their price; and this was remarkable when they remembered what the price increases in some of the other companies had been. Then there had also been an increase in the sales of gas; and, in fact, there was hardly an item which was not more favourable than before the war began. This was a position of which any proprietor might be proud. But the half year was not a fair one, because the current half year was going to be a most difficult one, although the Directors thought and believed that, if things went on in the way they were going now, at the end of the year they would still show a surplus—not a big one perhaps. He should like the proprietors, if they had any views, to express them on the subject of holding a single meeting in February, when they had the whole year's accounts before them, and of sending out an interim dividend. Now that they were starting an enlarged career with the two Amalgamated Companies, the time seemed favourable for reconsidering the position in this regard.

FAVOURABLE COAL POSITION.

This had been an extremely difficult time for all engaged in trade or commerce of any sort, and also, of course, for gas companies owing to the price of coal having gone up so enormously. The actual additional price of coal and oil, due to the favourable situation in which the Company were at this time last year, and also on Jan. 1 of this year, amounted to 1s. 7d. per ton; and he thought there were very few companies who could show such a satisfactory position as this. The price now being paid was 17s. 10d. per ton, as against 16s. 3d. this time last year. When they remembered the deplorable strikes and other troubles in the coalfields, the increase in freights, and the advance in the price of coal last winter, the condition of affairs would, he thought, be considered excellent. The price of coal and freights and deliveries of coal became such a scandal last winter that there had been many conferences, and Parliament had at length to consider the matter, and eventually a Bill was hammered-out (which became law a week ago), under which there was to be a limitation of coal prices. It was hoped that the Company would get some of the benefit under the Act, because most of their contracts, which were included in the average price he had given (17s. 10d.), were made since April, and at a much higher price than the Act allowed. He could not say how much, but he did hope that the Company would obtain some relief on their

price. The Act was not, in his opinion, going to do as much good as many people hoped; but it was going to do something.

COAL STORAGE—OLD AND NEW.

Another feature which was an extremely interesting one was that not only had the price of coal been extravagantly high, but there had been great difficulty in getting deliveries. Some companies had been almost on the rocks—not very far from where they were then assembled, there was such a shortage that the Company were afraid they might not be able to carry out their statutory obligations. In the case of the Brentford Company, they started the year—June, 1914—in an excellent position in regard to coal stock; and they had managed to hold their own. Not only had they held their own, but they were now in a bit better position than a year ago. But this meant a large sum of money locked up. It would be seen that they had now 59,802 tons of coal in store, and that the value of the coal and oil in stock was £73,971. This was equivalent to putting £73,971 on the ground until they wanted it. The Company had now to carry this large stock, whereas a few years ago they did not carry much more than 30,000 tons, and coal was then much cheaper. Therefore they did not have to put down so much money for coal stock then as at the present time. But it was important to the Company to have a proper stock. They must be independent of all exceptional circumstances—such as colliery troubles and high freights. The £73,971 meant 23 per cent. of the gross revenue for the half year, or nearly 9d. per 1000 cubic feet of gas sold; so that they had to carry out their business with their hands tied behind them to the extent of this £73,971.

CAPITAL ISSUE.

It was due to this large stock of coals that they had found it a little difficult for some years to carry on without increasing the capital. The fact was they were short of working capital. This brought him to the point that, in pursuance of the resolution passed at the previous meeting authorizing the issue of new capital, and having obtained the permission of the Treasury, the Directors sent out circulars inviting applications for the capital, and obtained a very handsome reply—a reply the extent of which, he confessed, he had had no hopes of receiving from the proprietors at such a time. The Treasury authorized them to raise another £150,000; and the proprietors found them £135,000, which he thought was a magnificent response. As he had pointed out, they had to carry large stocks of coal and oil, and they were even now a little short of working capital. But there was still £15,000 of the amount they were authorized to raise; and the Directors would be prepared to receive from any proprietor an offer to take a portion of this balance.

OIL CONTRACTS.

Returning to the subject of raw materials, he said the Company had been favourably situated with regard to oil. They had always taken pains to comply with their statutory obligations; and they had always aimed at having the best possible plant with which to deal with their raw materials. They had had very favourable oil contracts; and the fact that coal and oil had not together cost them more than 1s. 7d. per ton more than this time last year was largely due to the favourable oil contracts, which were still running, and would cover a considerable period in the future.

BUSINESS DURING THE WAR AND AFTER.

Now they had taken over the Staines and Egham and the Sunbury Companies; and they had had a very gratifying increase from both of them. There had been a 5 per cent. increase in consumers in the case of Staines; and there was also an increase in their own district. So that they had not gone back in a single item during the half year. There was an increase in the sales of gas of 1·65 per cent. and no advance in the price; and two-thirds of the sales increase had taken place in the lightest quarter. They had also made their dividend, with a handsome surplus. The profit, in fact, as seen by the accounts, was some £8000 more than it was this time last year. The increase in the gas business had been largely due to the great number of factories in the district supplying Government munitions for the Army and Navy. They had also had a large number of soldiers billeted in their area, and gas had had to be used for cooking for them. The working class residents, too, had had more money to spend, owing to separation allowances, war bonuses, and other things; and so they had been able to spend money upon more cooking, and perhaps better cooking. Anyhow, the slot meters had done extremely well; and to this was largely due their prosperity. It was only right, however, to point out that, after these allowances aud war bonuses ceased, and they came back to bed-rock conditions at the close of the war, the Company would, among others, be bound to feel the reaction. Therefore, they must be careful to husband their resources, and not to count upon the fact that in the future they would be in as favourable a position as they were in that day. As a point of interest, he might mention that their maximum hour's consumption occurred last month; it was usually the hour between twelve and one o'clock of the hottest Sunday in July.

NOTABLE ITEMS IN THE ACCOUNTS.

Regarding the accounts, coal had cost them about £10,000 more; but some good savings had been effected. Mr. Johnston, their excellent Engineer, had spent an enormous amount of time in promoting the efficiency of the plant. The make of gas per ton of coal had gone up something like 200 cubic feet per ton, which made a great deal of difference to them over the whole amount of coal carbonized. The unaccounted-for gas had become less. In fact, wherever there was anything to be gained by economy, their Engineer had done his best to secure it. The items of repairs and maintenance of works, and the repairs, maintenance, and renewal of mains, meters, stoves, &c., were perhaps more moderate than they had been for many years. As the proprietors knew, the Board had been most generous for many years in the way they had renewed and dealt with repairs and renewals; and the Company were now feeling the full benefit of this. Now they were running a little more easily. Heavy constructional work was also mostly done. Two other noticeable items were the active service allowance, £4306, and the war bonus, £2305, which together meant about £13,000 a year. In these two items, the Company were paying very nearly the equivalent of 1d. per 1000 cubic feet. They were new items; and, in spite of them, the balance carried to profit and loss account, as he had said, was £8000 better. They had had extra burdens to bear; but still they had a bigger profit. In the profit and loss account, there were extraordinary items which would not occur again. There was an item of compensation to the Directors and officers of the two Companies which they had taken over, amounting to £19,000. There was also the charge for conveyance and stamp duty, that they had been paid out of the undivided balance, which had been reduced by these amounts. The dividends only required £49,363; so that, as he had said, they would have something extra to carry forward to the current heavy half year.

THE COMPANY'S PART IN THE WAR.

A great many of their men had gone to the war—over 400 of them—and he regretted to say that twenty of them, perhaps more, had made the supreme sacrifice. There were about 100 who had been wounded. In passing, he might also allude to the fact that the son and partner (Mr. J. D. H. Radcliffe) of the Solicitor to the Company—a man of great promise, who last year helped to carry through their Act—was killed only a week ago. He was a man of exceptional brilliancy, both as a scholar and in his profession. So the Company had borne their full share of sacrifices and losses which the war was putting upon every family and every institution. The Company had also undertaken, and were ready to undertake, any work which the War Office authorities and the Munitions Committee thought they were capable of performing. They were recovering toluol for high explosive purposes; and they were going very shortly to enter upon the work of shell making. They had a large shop at Southall where they had installed for their own purposes lathes and machine tools; and they had now been appointed under the Munitions Committee a local depôt for munitions. In this shop they would soon be turning out 18-lb. shells. He was sure the proprietors would be pleased to learn that the Company were taking some part in this extremely important work.

Sir ROBERT SHAFTO ADAIR, Bart., seconded the motion.

Mr. GEORGE ENNIS and Mr. HERBERT WELLER (late Chairman of the Staines and Egham Gas Company) spoke in favour of the annual meeting, and congratulated the Directors upon the excellent report. Later Mr. ENNIS tested the feeling of the proprietors on the subject of the annual meeting by proposing a resolution (which Mr. BUDGEN seconded), to the effect that an annual meeting should be held instead of a half-yearly one. This was carried; and the CHAIRMAN said that the matter should be formally brought before the proprietors next February, as it was one which was entirely for their decision.

The motion for the adoption of the report and accounts was then unanimously carried.

Proposed by the CHAIRMAN, and seconded by Sir ROBERT ADAIR, the following dividends were declared, subject to income-tax: A dividend at the rate of 5 per cent. per annum on the preference stock, at the rate of £5 12s. per cent. per annum on the "A" consolidated stock, and at the rate of £5 10s. per cent. on the "B" consolidated stock.

Moved by Mr. CHARLES E. NUTHALL, and seconded by Mr. WILLIAM MORRIS, a hearty vote of thanks was passed to the Chairman and Directors and the officers of the Company.

The CHAIRMAN, in the course of his reply, spoke of the confidence that the Board had in Mr. Johnston, the Engineer and Manager, and of the good work performed by the Secretary (Mr. Croxford).

TOTTENHAM DISTRICT LIGHT, HEAT, AND POWER COMPANY.

The Annual Ordinary General Meeting of the Company was held last Saturday, at the Works, Willoughby Lane, Tottenham—Sir CORBET WOODALL, D.Sc., in the chair.

The SECRETARY (Mr. E. Topley) read the notice convening the meeting; and the Directors' report and the statement of accounts were taken as read.

GAS CONSUMPTION AND PRICE DURING THE WAR.

The CHAIRMAN, in moving the adoption of the report and accounts, said the latter showed that the Company were bearing the strain of the war extremely well. Notwithstanding the darkened streets and shops, and the lessened consumption of gas due to the household economy which was being widely preached and wisely practised, there was still an increase in the gas sold of 1½ per cent. over the corresponding period of last year; and this could not but be regarded as satisfactory. War had made nearly all the factories in their area busy; and the Company had had increased demands from many of those who already depended on them for power. In addition, they were gratified that two factories which had their own gas-works—viz., the Enfield Small Arms Factory and the Edison and Swan Electric Lamp Works—were now taking supplies from the Company. Beyond this, the Alexandra Palace, which was now being used as an internment camp, had largely increased its demand. It was perhaps not surprising that, while the middle-class consumers were economizing, as was evidenced by a decrease for the six months of 1093 cubic feet, or 4·74 per cent. per ordinary meter, the manual workers (who formed the great majority of coin-meter users, and who were prospering greatly) used 286 feet, or 3·31 per cent., per meter more. The Directors had striven long against advancing the price of gas; and the innate strength of the Company had made it possible, notwithstanding the decreased consumption and increased expenses, to pull through without such an advance, had it not been for the great rise in the price of coal, which rendered a continuance at the price of 2s. per 1000 cubic feet impossible. The proprietors who read the local Press would have noticed that a difference, now happily adusted, arose between the Tottenham District Council and the Company over this matter. The Company desired to raise the price to 2s. 4d.

By an undertaking entered into in May, 1913, when the Company's Bill was before Parliament, the Council had it in their power to prevent the price being raised to more than 2s. 1d. until May, 1916; and at first they thought it their duty to exercise their veto. On further explanation being given to them, however, and especially in view of the fact that to continue the price at 2s. or 2s. 1d. would have meant a heavy loss to the Company, which must be made good by those who might be consumers after Midsummer, 1916, the Council reconsidered the whole matter; and a compromise was arrived at by which the proposed increase was reduced to 3d., making the price from the reading of the meters at Midsummer 2s. 3d.—still very low for London or the suburbs. The Directors trusted that this increase might be found sufficient; and they would endeavour to make it so. They regarded the incident as another evidence of the value of the cordial relations which had so long subsisted between the Council and the Company, who were both animated by a common desire for the welfare of the community they served.

WORKERS AT THE FRONT AND AT HOME.

The work of the Company was being carried out with some difficulty. About 260, or 30 per cent., of the employees had temporarily left for active service for their country; and the necessary replacement of the majority of them had not been easy. Mechanics of all kinds and skilled motor drivers were very scarce; and, generally speaking, in all classes the soundest men were with the country's forces. Abundance of employment in the neighbourhood, and with wages more than liberal, had formed temporary counter-attractions to co-partnership. By granting war bonuses, the Directors had helped the men to meet increased expenses; and they were generally satisfied. Extra men had been required as the Company were undertaking important work for the War Office in producing, in different ways, materials for the manufacture of high explosives. The prospect of carrying on through the increased pressure of the winter's work gave rise to some anxiety; and the Directors felt that, if the supply of gas was to be safeguarded, it would be impossible to allow further enlistments from their employees. Fortunately, up to the present, the casualties among the Company's employees at the front and in the Navy had been few—only three deaths (Thomas Sutton, whom he mentioned at the last meeting, Thomas C. Piggott, and W. A. Spencer) having become known to them, and sixteen cases of severe wounds. There were also four who were prisoners of war.

THE CAPITAL ACCOUNT.

Dealing with the accounts, the capital charge per million cubic feet of gas remained about the same as during the previous six months—viz., £438 per million. Unfortunately, the new section of the works, which it was hoped would be ready to help to meet the coming winter's demand, could not now be finished in time for this purpose; and the standstill of the capital per million was due to this cause, but there must in the near future be a material increase of the relation of capital to business. The delay was satisfactory in some respects, because the increase of output had been checked, and at the same time the difficulty and cost of issuing further capital just now would be unusually great. The new show-rooms at Enfield were complete and had been opened. It was gratifying to know that, from experience gained, there was no doubt that the public would greatly appreciate the convenience of these new offices and show-rooms, and that much business would be done in the latter.

COAL AND OIL SUPPLIES.

Turning to the revenue account, it would be seen that coals had cost less by £2500. This was owing to the quantity used being 3100 tons less than in the corresponding period. Coal supplies were so difficult to obtain that the Directors had had to adopt the policy of making more oil gas. They had had very anxious times so far as the coal supplies were concerned. During February and March, this was especially so. At one time the coal actually in stock on the works was so small that it would only have met five days of the reduced requirements. The causes of the short supply of coals were largely a shortage of railway waggons, congestion of traffic on the railway, and delay in transit, making the shortage of waggons still more pronounced. In addition to this, enlistments at the collieries were extremely heavy, and by far the largest proportion was from among those who actually hewed the coal. This restricted the output, and at the same time a trade boom increased the demand. The combined effect had, of course, been to increase the price enormously; and this effect would be felt far more during the current half year. This, he thought, would be apparent to all the proprietors, because in the half year with which they were dealing—the half year to June 30—a considerable portion of the coal bought at the lower price in the previous year came into use, and was now practically exhausted; and they were now carbonizing the high-priced coal almost exclusively. Restricting the output naturally tended to higher prices, and, under the miners' sliding-scale, higher prices for coal meant higher pay to the miner. This enabled him with less work to satisfy his wants; and thus the output was still further restricted. The Company had renewed contracts at prices varying from 4s. 6d. to 7s. per ton rise. As was generally the case when coals were dearer, the quality was inferior, and the make of gas per ton had fallen to 12,811 cubic feet, as against 13,148 feet in the corresponding half year. On account of the larger make of oil gas, the next two items—coke and oil—were up by £6400. Working results were not so good as in the previous half year, due to the Company having to help the poor coal as far as possible to maintain production of gas and illuminating power. In connection with oil, it might be mentioned that there was a serious prospect of shortage in the supply of this material for gas-making purposes, due to the Admiralty having commandeered so many tank-steamers, and, he might add, owing to the Germans having added to the difficulty by sinking a few of them. At the present time, there was little oil in the country, and a serious position was likely to arise, unless the Admiralty found it possible to release some of the steamers. This matter at the present time was receiving the careful consideration of the Board of Admiralty. Wages and gratuities at the works showed a considerable decrease. This was partly because of the increased quantity of oil gas made, which required a much smaller number of workers; but it was far more on account of the realization of one of the objects of amalgamation with Enfield—viz., the economy of manufacturing gas at the more modern works at Tottenham for supplying the Enfield district.

OTHER ITEMS OF EXPENDITURE.

Repairs of works showed an increase of £1200; but this item was by no means excessive. Salaries in the rental and inspection departments were less because of the employment of boy and girl clerks for carrying on while the regular men were fighting. Repairs of mains were temporarily down £2300, because, owing to the shortage of labour, it had been found necessary to send the main gangs to do service for the Company at the works. The two unusual items which closed the debit side of the revenue account – viz., payments to dependants of men on war service and the war bonus on wages to help in the matter of the increased cost of living—the Directors felt assured would meet with the hearty approval of the proprietors. It might be noticed that several items which usually did not vary were slightly down. But this was because, for the first time, electricity appeared in the accounts, and certain costs had to be divided between gas and electricity in proportion to the capital respectively employed.

GAS AND RESIDUALS.

Regarding the credit side of the account, the increased income from gas and decreased return for public lighting had already been explained. The unaccounted-for gas for the half year amounted to 6·45 per cent. The returns for residuals needed some explanation. Coke realized a slightly higher price per ton, but had given a less return because a less amount of coal had been carbonized. Difficulties had been experienced in the delivery of coke to their customers, who usually took their supplies by rail, as the stations to which most of their coke was consigned had been closed to all except Government traffic. Fortunately, they had made an increase to their fleet of motor lorries. These continued to be very serviceable and increasingly popular with their coke customers; and by their use they were gradually securing a monopoly of the coke trade within cartage distance of their works. Tar showed a very satisfactory return on paper. The price had dropped enormously, nearly 25 per cent.; but the production had been surprisingly great, and had made up for the bad price. He was not at all sure that, when the next account was presented, the large return this half year would not be qualified. Sulphate returns were regrettably poor, as regards production and price. There did not seem to be anything mysterious about this, except that there had been a little mistake in taking the stocks. The usual quantity of ammonia did not appear to have been in the coal which they had used; and they undoubtedly lost a considerable proportion owing to a serious breakdown in the scrubbing plant, repair parts for which they were unable to procure from the makers for some months, owing to their being urgently engaged on war work. As to price, a great slump took place last autumn; but a remarkable recovery had been made, partly due to the fact that the German supply to the world's markets had been stopped, and partly on account of the organization of the sulphate of ammonia trade by the formation of an Association for this purpose, and which had been very helpful. The Company's advance sales were made before the recovery took place; and they had not, therefore, obtained the full advantage that would be secured in the current half year. In connection with sulphate of ammonia, it might be mentioned that considerable difficulty had been experienced in obtaining the necessary acid for the manufacture, as so much of it was required by the Government for making munitions. On the whole, he thought the accounts would be considered satisfactory, having regard to the great difficulties with which they had had to contend during the last half year.

THE ELECTRICITY UNDERTAKING AT WOOD GREEN.

The electricity undertaking showed a small loss for the half year. This was inevitable. Although the number of consumers was steadily increasing, and was now over 90, progress had been delayed by the war. Very many who intended taking current had deferred it for the present. The early charges against revenue, such as stationery and similar items, were disproportionately great. The fixed charges, such as rates and taxes and wages, would allow of an increase many times as great as the output in the past half year without a corresponding increase in expenses; and it might be expected with some certainty that the small deficiency in the revenue account would soon be converted into a surplus. The gas used in generating included a considerable quantity employed in engine trials and testing, and also for drying the building. The engines were not quite satisfactory; and the consumption of gas per unit had been very considerably reduced. In all ways, they had reason to be satisfied with the start made.

THE BURDEN AND VICTORY.

Six months ago he closed his observations by saying that he looked forward with an easy mind as to what would be their position when next they met. That day he was content to stand where they did. They were paying their full dividends; and, although there must be a reduction in them in the immediate future, it might be hoped that it would not be for long. The burden of the war was a heavy one; and they would, without grudging the payment of their part, pray for a speedy victory worthy of the terrible cost.

Mr. HENRY BAILEY seconded the motion.

Mr. DANDO inquired whether, so far as could be foreseen, the Board considered the electricity concern would be satisfactory.

Mr. MICHEL asked whether the electrical energy was used for power as well as for lighting. He had had a little experience of the economy of electricity for power purposes; and he thought that if it were more generally realized what a great advantage was to be derived by those who adopted electricity in a neighbourhood such as Wood Green, with an increasing population, the Company would not be long before they had a good many customers.

The CHAIRMAN said there was little to add to the observations he made in his address regarding the electricity undertaking. The Board were satisfied with it, although it showed, in the first half-year's working, a slight loss. The war breaking out when it did had hindered people spending money which they could avoid, and so it had prevented changes being made. Respecting the consumption of electrical energy for power, Wood Green was almost entirely residential; and

while they had one or two power users to a small extent, generally speaking, the current was used for lighting.

The motion was unanimously carried.

THE DIVIDENDS.

Mr. JAMES RANDALL moved the declaration of dividends at the rates per annum of 5 per cent. on the preference stock, 7½ per cent. on the "A" consolidated stock, and 6 per cent. on the "B" consolidated stock, all less income-tax, and payable on Aug. 14.

Mr. HENRY WOODALL seconded the motion, which was unanimously adopted.

DIRECTORS AND AUDITOR RE-ELECTED.

The CHAIRMAN said he had a letter from Sir Daniel Goddard, M.P., saying how sorry he was he could not be present that day. He was one of a large number who were deputizing about the country, helping in the national service in more ways than one—especially in the matter of recruiting. Proceeding, the Chairman proposed the re-election as a Director of Mr. James Randall. It was, he remarked, utterly unnecessary to say anything in commendation of this proposal. Mr. Randall had been known more than anybody else on that side of the table in connection with the Company; and his record had always been one of good and faithful service—not only as an active officer of the Company, but, as he (the Chairman) well knew, as a colleague on the Board.

Mr. G. OSBORN seconded the motion, which was heartily passed.

Proposed by the CHAIRMAN, and seconded by Mr. J. WALKER FORD, Mr. Henry Bailey (who formally retired in order to regularize the re-elections under the Act of 1913) was also re-elected.

Both Mr. RANDALL and Mr. BAILEY responded.

Moved by Mr. MALYERS, and seconded by Mr. DANDO, the retiring Auditor (Mr. John Eve) was re-appointed.

Mr. EVE, in acknowledging the continued confidence of the proprietors, praised the excellent system under which the books were kept, and which enabled the accounts, despite the enormous amount of detail, to be prepared for the proprietors promptly after the close of the half year.

VOTES OF THANKS.

Mr. MICHEL proposed a hearty vote of thanks to the Chairman and Directors, and to the officers, staff, and workmen for their services. He remarked that the proprietors were very grateful to the Board and the officers, for some of them hardly anticipated quite such a favourable report as they had received. Many of them had been predisposed, from their experience in connection with other companies, to fear their dividends this half year might not be so good as those that had immediately passed. They were sure the Chairman and Board must have had a most anxious year. It had been an anxious one for them all. But in the conduct of the affairs of the Company, with a large part of the staff directly serving the country, the Board must have been in a difficult position. There had also been considerable difficulties to contend with in connection with coal and oil. In expressing their grateful thanks, the proprietors desired to do so with peculiar emphasis, as they thought not only of the Chairman and his colleagues, the Engineer, the Secretary, staff, and Auditors, but of the 200 of their employees who were away, and remembered the anxiety of their relatives. They wished their expression of sympathy to reach the relatives, and their condolences with those who had lost those who were dear to them. That day therefore their vote had an added significance. They hoped that their men who were now serving the country in different ways, either on the Continent or at home, would be spared to come back to them, and long remain an integral part of their staff.

Mr. H. C. WELD seconded the motion, which was carried.

The CHAIRMAN, returning thanks on behalf of himself and of his colleagues, said that their feeling was one of complete sympathy with the expressions Mr. Michel had used as to the times through which they were passing, and as to the men who had gone from them and those who were at home working for them. It had been a time of great anxiety; and he hoped that the local authorities and the consumers were satisfied that they were not simply men who were striving to get the uttermost farthing out of the undertaking, but that they did feel they had obligations, as well as privileges, in their position as a public company, and that they strived to live-up to these obligations to the utmost possible extent. It was true the Urban Council for a time declined to entertain the idea of an immediate rise in the price of gas; but the Board were more than gratified by the fact that, after the Council had passed a resolution to that effect, they reconsidered the matter and agreed to the increase which was now being made. The effect of this would be, he hoped, that no further increase would be necessary; but if there had not been this increase now, there would have been one in future of a larger amount. With regard to the workmen, he desired to say that, so far as he could see and know, there was keen anxiety on their part to be of use in the position they occupied. The Company were doing all they could to help the War Office in the heavy task they had in front of them; and he believed that every man who was capable of doing service on the works would do it. They were anxious to do all they could to help the country, although they might not go out to fight for her.

Mr. A. E. BROADBERRY said that Mr. Topley had asked him to reply on behalf of himself and his staff as well as for the engineering staff and workmen. He therefore, on behalf of all, thanked the proprietors for their vote of thanks, which was very encouraging. The workmen almost to a man were working earnestly and cheerfully for the Company. Temptations had been held out to them by the high prices of labour in the different factories round about. But the majority of them knew the Directors had their welfare closely at heart, and that so long as they gave good service to the Company they had permanent work. The war was not going to last so long as the men would require service; and this the men appreciated. With the strong and firm example that the Chairman gave them, officers and men alike would be very poor tools indeed if they did not do their best.

Mr. J. L. CHAPMAN, on behalf of his co-auditor and himself, also thanked the proprietors. The Company, he said, had a valuable staff. In view of the many difficulties the Company had had, it was a pleasure to see the wonderful manner in which they had come through. He looked to the small increase of the price of gas in the current half year fully adjusting matters.

NEWPORT (MON.) GAS COMPANY.

The chair was taken at the half-yearly meeting of the Company by the Deputy-Chairman (Mr. T. G. Cartwright, J.P.), in the absence through ill-health of Dr. H. M. Brewer. It was pointed out that over sixty employees had joined the Colours; the difficulty with the men having been not to get them to go, but to persuade them to remain behind. The appointment of the Manager (Mr. J. H. Canning) as head of the department in South Wales in connection with munitions of war, was felt to be a great honour for him and for the Company. The cost of everything had gone up; and they were paying out an amount of £664 each half year to the dependants of the absent employees. All this had necessitated an increase in the price of gas. There had been some falling off in the sales of gas; but the whole of the accumulated stock of coke had been disposed of at fairly good prices. The new coal contracts showed an increase in price of no less than 10s. 6d. per ton. The report having been adopted, the statutory dividend of 5 per cent. per annum was declared. A vote of thanks to the staff was acknowledged by the Secretary (Mr. T. H. Hazell), the Engineer (Alderman T. Canning), and Mr. J. H. Canning. Alderman Canning, referring to the fact that there had been a diminished demand for tar, said the falling off partly arose from the view taken by corporations and county councils that this was a time to economize. So it was; but if to economize meant to bring about loss, there could be no economy. The putting of tar on the roads had meant, so far as Newport was concerned, the saving of two-thirds of the cost of repairs to the roads and three-quarters of the cost of sweeping.

WAR BONUS STRIKE AT MACCLESFIELD.

A Speedy Settlement.

Last Tuesday and Wednesday week, 115 employees of the Gas, Water, Highway, and Health Committees of the Macclesfield Corporation left work, in accordance with notices tendered a fortnight previously by the National Union of Gas Workers. The number of employees of the Gas Committee who ceased work was 36, and of the Water Committee 15.

During February, an application for an advance in wages of 5s. per week was made by the men; but the Town Council declined to grant any advance. Subsequently, Mr. J. R. Clynes, M.P., the Lancashire District Secretary of the Union, wrote urging the reconsideration of the question, and hinting that something less than the 5s. originally asked for would be accepted. A Special Committee, consisting of the Chairmen of Committees, considered the whole question, without, however, conferring with the representatives of the men; and they made a recommendation that the Committees be empowered to grant a war bonus of 2s. per week to employees, with dependants, in receipt of less than 25s. per week. The Council adopted this recommendation; and forms asking for particulars with regard to income and dependants were issued to men earning less than 25s. This concession did not satisfy the men, who also objected to the "inquisitorial forms" which had to be filled up before the bonus of 2s. could be allowed. In communications to the Town Clerk (Mr. F. R. Oldfield), Mr. Clynes contended that the amount offered was inadequate to meet the increased cost of living, and that the method of making the grant discriminated unfairly between the employees. It was also urged that the Council should hear the men's side of the case, and that the dispute should be referred to arbitration. Matters, however, reached a deadlock; the Mayor stating that the subject could not be re-opened in the absence of fresh circumstances.

Following the cessation of work, interviews—from the beginning, the Council adopted the policy of no conferences or interviews—with the men's representatives took place; and it was again decided by the Special Committee that they could not recommend the Council to alter their decision as to the war bonus, or to depart from the previous attitude against a conference or reference of the dispute to arbitration. The same evening, a public meeting of the men on strike, and the local Trades Council, was held, at which a resolution was unanimously carried regretting the inconvenience caused to the townspeople, and placing the responsibility for the strike on the shoulders of the Corporation. It was also reported that the Trades Council had communicated with the Board of Trade, and asked for their intervention. In the communication, attention was drawn to the proceedings of the Corporation in dealing with the men's application. It was also pointed out that the Union did not desire a strike. What they complained of was the "stiff-necked and unpatriotic manner" in which the question had been dealt with by the Corporation. The men also complained of petty tyranny on the part of officials.

Mr. Clynes, addressing a meeting of the men, emphasized the point that the movement was entirely a men's movement, and was not in any degree owing to outside instigation. The stoppage of work was due, not to any extravagant demand on the part of the Union, but to the unwillingness of the Corporation to discuss, interview, or negotiate in any way. The Union had a right to insist upon discussion, upon interviews, and, if necessary, upon the submission of the question in dispute to arbitration. It had been left to the Corporation of Macclesfield to decline to meet the leaders of the largest Trade Union of its kind in the world. Failing discussion, they had no option but to hand in notices. As to the decision of the Council to empower the Committees to grant war bonuses of 2s. weekly to men whose wages were less than 25s., under certain conditions, Mr. Clynes said that one man in four or five had been picked out for this favour. The Union objected to discrimination between man and man. If they were going to pay a man according to his domestic circumstances, where were they going to land themselves? The principle was impossible. Men who were engaged on the same class of work should be paid the same rate of wage. They should pay for work according to its value; and

if they were not getting value for their money, they should resort to the usual plan of getting men who did earn their money.

On the Saturday, it was announced that further negotiations which had been proceeding between representatives of the Corporation and their employees had been brought to a satisfactory conclusion; the men at a mass meeting agreeing to accept an offer made on behalf of the Corporation of a war bonus of 2s. per head to all workmen receiving 30s. per week or under, and 1s. to those whose wages exceed 30s. This bonus, it was also agreed, should be continued for three months after the termination of the war.

Immediately the strike occurred, official advertisements were issued to gas consumers giving notice that the Gas Department could not guarantee a supply of gas during the continuance of the strike, though every effort would be made to maintain it. Mr. J. E. Blundell (the Gas Manager) had, however, no difficulty in keeping up an uninterrupted service during the brief period the men were not at work—indeed, he had made complete arrangements to "carry on," had it been necessary to put them into operation. The water supply was entirely unaffected by the strike.

BELFAST GAS SUPPLY.

The Engineer and Manager of the Belfast Corporation Gas-Works (Mr. James D. Smith) forwards a copy of the report of his Committee, together with the accounts for the year ended March 31.

According to these, the gross profit on the manufacture and sale of gas and residuals was £45,098—being a decrease of £18,187, as compared with the previous year. Bankers' interest and rents received from property purchased for the projected extension of the gas-works realized £456; and there was a profit on the working of the stoves department of £962. From the total gross income of £46,516, there was deducted for dividends and interest on capital £15,953, and the equivalent of interest on the redeemed stock £4833. The net profit thus shown (£25,731) was a decrease of £19,896 compared with the previous year. There was brought into the account from the 1913-14 accounts an amount of £23,413, and the total credit of the profit and loss account was £49,144. It has been determined to carry £7976 to the sinking fund, £1600 to the reserve fund for insurance of works, and £3000 to the contingent renewal fund. These three sums, together with the cost of the thirtieth issue of stock (£3160), will leave a balance for disposal of £33,408.

The Committee have already contributed for public purposes £10,000 in aid of the rates, and £11,311 as dividends and sinking fund on the new City Hall stock. The result was that an amount of £12,097 will be carried forward to the credit of the profit and loss account for the current year.

The following is a summary of the allocation of profits from the gas undertaking during the past forty years—since the works were taken over by the Corporation in 1874.

	£ s. d.	£ s. d.	£ s. d.
Total gross profits, 1874-1915		2,013,170 16 3	
Less interest and dividends		628,231 11 0	
Net profits			1,384,939 5 3
Allocated as follows:—			
Sinking fund	236,634 11 11		
Extension of works, &c.	484,377 15 11		
Depreciation	111,231 13 1		
Reserve funds	130,523 1 3		
Extension of retort house stock	2,874 0 0		
Cost of issuing stock	12,800 18 5		
Cost of arbitration, Belfast Corporation Act, 1912	1,394 12 8		
		979,836 13 3	
Payments to City Council, as follows:—			
General purposes fund, in aid of rates	187,500 0 0		
Dividends and sinking fund, new City Hall	146,074 17 3		
Parks Committee	3,913 9 11		
Library Committee	9,550 0 0		
Baths Committee	600 0 0		
Electric Committee	40,573 8 5		
Dials for Memorial Clock	300 0 0		
Temporary Albert Bridge	3,500 0 0		
Cost of Finance Bill, 1889	993 15 0		
		393,005 10 7	
			1,372,842 3 10
Balance at net revenue, March 31, 1915			12,097 1 5

At the Monthly Meeting of the Corporation last week, the minutes of the Gas Committee were submitted.

Alderman CRAIG, in moving their adoption, alluded to a recommendation to raise the price of gas to ordinary consumers 5d. per 1000 cubic feet gross, bringing it to 2s. 6d—the new price to be subject to 20 per cent. discount. The gross profit of the undertaking for the year, he pointed out, amounted to £45,098, a decrease of £18,186 as compared with the previous twelve months. In June of last year, the price of gas was reduced from 2s. 3d. to 2s. 1d. per 1000 cubic feet, less 20 per cent. discount; and this was largely accountable for the reduced profits. It had always been the policy of the Committee to supply gas at the lowest possible rate; and they regretted that it was now necessary to increase the price. Coal, however, was costing 8s. per ton (or £16,000) more than last year; £5500 would be absorbed in paying the war bonus to employees and half-wages to reservists and volunteers; while sundry materials and expenses would cost £8000 more. From the total increase of £29,500, he deducted £9000 the estimated saving in cost of oil owing to a cheaper purchase. In 1904, the price of gas was 2s. 3d., whereas to-day it was 1s. 8d. net; and the proposed new price would be 2s. net. The contract price for coal in July, 1904, was 13s. 2d. per ton; whereas the contracts just made were as high as 25s. per ton. Gas had thus been reduced during the last eleven years 7d. per 1000 cubic feet, and even with the proposed increase would still be 3d. cheaper. The amount allowed off gas accounts as discount in 1904 was £11,200; and for the year ended in March last it was £36,000, or over 200 per cent increase. It was therefore evident that the interests of the consumer had not been neglected. They were proposing to increase the price to ordinary consumers from 2s. 1d. to 2s. 6d. gross, which was equal to 4d. per 1000 cubic feet net; and in the case of prepayment meters they would give 35 feet for 1d., instead of 40 feet.

The minutes were adopted.

A staff contributor to the Belfast "Northern Whig," dealing with the statistics for the past year, remarks that the proportion of water gas supplied to the public was 41·5 per cent., and coal gas 58·5 per cent. The cost of coal gas as delivered to the gasholder was 10d. per 1000 cubic feet, and that of the water gas over 13d. "The necessity to make a large proportion of water gas from considerations of space for many years to come," he says, "is another of the heavy bills that we have to pay for the dubious privilege of keeping the gas-works in the centre of the city."

SOUTH SUBURBAN GAS COMPANY.

Directors' Half-Yearly Report.

On Friday the shareholders' meeting of the South Suburban Gas Company will be held; and, in anticipation of it, the Directors have issued the following report. It is signed by the Chairman of the Board, Mr. Charles Hunt, M.Inst.C.E.

The delivery of coal has greatly improved since the beginning of the year; but the exorbitant prices required for the current year's supply necessitated a further increase in the price of gas of 5d. per 1000 cubic feet, as from the Lady-day quarter. This increase involves a further reduction of dividend, and also of the bonus paid to co-partners.

The net revenue account shows that, including the balance of £189 brought forward from last half year, and after providing for debenture and other interest and placing £2712 to the special purposes fund, the amount available for dividend is £32,862, out of which the Directors recommend the payment of statutory dividends (less income-tax) as follows:—

On the 5 per cent. preference stock	5 per cent.	per annum.
,, ,, ordinary ,,	£4 16s. 8d.	,,
,, ,, ,, (West Kent) stock	£4 16s. 8d.	,,

Leaving to be carried forward to next half year the sum of £5074.

As compared with the corresponding half of last year, the consumption of gas shows an increase of only 0·06 per cent., the smallness of which is attributable to the exercise of economy on the part of consumers and the continued curtailment of public and shop lighting—851 new consumers having been added during the half year.

The receipts for residuals have been favourably affected by a great improvement in the demand for coke, and, to a less degree, in that for sulphate of ammonia.

There are now serving with His Majesty's forces 210 of the Company's employees, and others are assisting in the production of war munitions. At the suggestion of the Management Committee and members of the Livesey Memorial Hall and Institute, the use of this building as a hospital for the wounded has been offered to the Royal Army Medical Service. A vacant piece of ground belonging to the Company at Lower Sydenham was offered to the London County Council for the storage of coal for use during the coming winter.

Co-partnership—in spite of a reduction of its material advantages, which it is hoped may prove to be only temporary—is, if possible, more popular than ever, and the Directors attribute to it, in no small degree, the continued goodwill and hearty co-operation of all ranks of the Company's employees, which, at all times essential to the well-being of the undertaking, can never be more so than during this period of exceptional stress.

SALFORD CORPORATION GAS COMMITTEE'S REPORT.

The Engineer and Manager of the Salford Gas Department (Mr. W. W. Woodward) sends the following report of the Gas Committee to the Council of the County Borough. It is signed by Alderman F. S. Phillips, the Chairman.

In presenting to the Council the annual report for the year ended the 31st of March, 1915, your Committee have pleasure in recording that, notwithstanding the war, the number of consumers has continued to increase during the past year. The sales of gas have also shown an increase equal to 4·85 per cent.; but this increase is somewhat inflated by the fact that the meters were read at a later period than usual at the end of the year.

The coal and cannel carbonized during the past year amounted to 163,426 tons, as compared with 157,867 tons for the previous year; and the quantity of gas made to 1,807,138,000 cubic feet, as compared with 1,774,207,000 cubic feet for the previous year. The average illuminating power during the past year was equal to 16·42 standard candles—the parliamentary standard being 14 candles.

The works and plant have been maintained in a thoroughly efficient condition; and the erection of the installation of vertical retorts at the Regent Road works is progressing. This work, however, is only proceeding slowly, owing to difficulties connected with the war.

The demand for gas appliances generally has been very satisfactory; and the business done has been greater than in any previous year.

The total number of ordinary cookers on hire at March 31, 1914, was 10,509, and by the 31st of March, 1915, this figure had increased to 13,655. There were no prepayment cooking-stoves in use at March 31, 1914; but 2997 were fixed during the year ended the 31st of March, 1915. The total number of gas-fires on hire at March 31, 1914, was 469; and by the 31st of March, 1915, the number had increased to 1970. Unfortunately, these satisfactory increases are not likely to be maintained, as the Local Government Board have, for the present, prohibited the borrowing of any further money for such purposes; and consequently additional purchases are restricted to the amount of the unexpended money already borrowed.

Your Committee regret that the total receipts from the sales of residuals show a very large decrease compared with last year. The market prices of coke, tar, and sulphate of ammonia have fallen considerably; but the prospects for the current year with regard to coke and sulphate of ammonia are somewhat brighter.

Owing to the great fall—amounting to £8468—in the market value of residual products as compared with the previous year, and to the increased expenses due to the war, your Committee were reluctantly compelled to recommend the Council to increase the price of gas, as from Dec. 31, 1914, by 3d. per 1000 cubic feet to ordinary consumers, and to reduce the quantity supplied to consumers by prepayment meter from 35 to 32·73 cubic feet per penny.

Since this increase in the price of gas came into operation, your Committee have been faced with greatly increased costs owing to advances in wages, additional payments to dependants of men on active service, and to an enormous rise in the price of coal required for the current year. Consequently, your Committee were again obliged to recommend the Council to make a further increase in the price of gas, as from April 7, by 6d. per 1000 cubic feet to ordinary consumers, and to reduce the quantity supplied to consumers by prepayment meter from 32·73 to 27·27 cubic feet per penny.

Appended to the report is one upon the illuminating power of the gas, as tested by Mr. Francis Jones, M.Sc., F.C.S., F.R.S.E., in the course of which he says that the illuminating power of the gas made at both works was lower than the previous year's average. At the Bloom Street works the average illuminating power, as tested by the bar photometer, was equal to 16·36 standard candles. At the Regent Road works it was 16·47 standard candles. The highest test recorded was 17·66 standard candles; the lowest, 15·26 standard candles. The gas was tested for sulphuretted hydrogen by the ordinary lead paper test, and on no occasion was it found present. Subjoined are the results of the illuminating power tests for the last three years.

	Average Illuminating Power. Standard Candles.		
	1912-13.	1913-14.	1914-15.
Bloom Street works	18·59	17·47	16·36
Regent Road works.	19·22	17·96	16·47

BLACKBURN CORPORATION GAS-WORKS.

Mr. A. Morton Fyffe, the recently appointed Engineer and General Manager of the Blackburn Corporation Gas-Works, recently submitted a report [*ante*, pp. 253-4] to the Gas Committee, in which he gave facts regarding the present position of the undertaking, and recommended the taking of certain steps to improve the condition of matters. This report was discussed at the last meeting of the Council.

Sir Edwin Hamer (an ex-Chairman of the Gas Committee) moved that it be referred back to the Committee. He described the report as one of the most serious ever issued during his long connection with the Corporation. It told them that practically one of the largest and most important Committees was in a state of bankruptcy. If it were a private concern, bailiffs would be in, and the Official Receiver as well. In the case of the Gas Committee, however, they had the rates of the borough behind them. The Committee had visited the gas-works; and he supposed they were satisfied the report was correct. How did this bear upon what had happened during the last eighteen months? Eighteen months ago there was a serious strike at the gas-works, which cost the borough as much money as would have rebuilt the works in the most modern style. He asked, seriously, whether the Council had not better instal new plant, rather than spend money on apparatus which it was said would have to be taken out. The gas consumers had helped to make the works pay in the past; and now they would be called upon to pay rates to help the Gas Committee.

Mr. Gregson, who seconded, said they could not have a worse report respecting any other department. It would be a "scandal" to pass the matter over with a formal acceptance of the report.

Mr. Wild said he represented a district where the people largely used gas. The poor had been hard hit by the increased cost of living and the stopping of local weaving-sheds. The Corporation were now going to stop their light; for this was what the 7d. per 1000 cubic feet increase in price would mean in some cases. He had been asked why the price could not have been increased gradually for a few years, instead of putting on 7d. all at once. He suggested that the matter be referred back, and a reduction made respecting the proposed increase.

Alderman Crossley pointed out that the increase suggested had nothing to do with the management of the works, but arose out of outside conditions. The causes necessitating a revision of prices applied, not only to Blackburn, but throughout the length and breadth of the land. He agreed that this was probably the most serious report ever presented to the Council. He also agreed, however, that the policy adopted by the new Chairman of the Gas Committee (Alderman Nuttall) to face things, rather than to hide them and continue in a disastrous way, was much the wiser and better course. It was unfortunate Sir Edwin Hamer should have said, entirely unsupported by the report or accounts, that the concern was in a state of bankruptcy. It was nothing of the kind.

The minutes of the Gas Committee, including the acceptance of the report as published, were subsequently approved; Sir Edwin withdrawing his amendment.

STOCKPORT GAS-WORKS RESULTS.

The report of the Gas Engineer (Mr. S. Meunier) for the past financial year was presented at the monthly meeting of the Stockport Town Council last Wednesday.

Mr. J. Winter, in moving the adoption of the report, said that, when twelve months ago he had the same task to perform, he could not claim any success for the department over the previous year; and he now found himself in a similar position. The profits of the department last year were £8544, as against £13,911 in the previous year, a reduction of £5367. He attributed the reduction of the gas profits to the great fall in the price of residuals. As a matter of fact, previous to the war the price obtained for coke was very low indeed. For tar it was exceptionally low; and it was also low for liquor. After the war began, these prices went lower; but since March they had gone a little higher. The price received for coke in March, 1914, was 10s. 5d. per ton, as against 8s. 5d. in March, 1915; tar was 38s. 1d., as against 32s. 2d.; liquor, 13s. 3d., as against 10s. 7d. In May, 1914, coke realized 8s. 8d., as against 12s. 10d. in May, 1915; tar, 34s. 4d., as against 31s. 10d.; liquor, 11s. 9d., as against 13s. 6d. The shortage of revenue was caused also by the diminution of the consumption of gas for industrial purposes. From August until December most of the mills were partly stopped; and the town was in a depressed state. Naturally, the gas undertaking suffered very much indeed. Further difficulties were put in their way by the restriction of borrowing powers. If they could have had the borrowing powers to which they were entitled for this year's working, they could have installed plenty of stoves and grates which would have helped to increase the revenue. They had converted a portion of their plant to obtain an increased output of toluol; but if the Government were going to restrict the output of gas, they could not do what they desired in this direction. The unaccounted for gas was considerably less than any previous year; being under 5 per cent., which was very low indeed.

Alderman Graham argued that if the gas undertaking were worked on proper lines, the amount of revenue received from year to year, instead of being applied to the reduction of the rates, should be applied to purchasing any new plant that was required. It was an injustice to the consumers of gas that they should be saddled with such a continual increase of borrowed money; and this he thought accounted to a large extent for the poor results obtained during the past year. He was glad to see that the Government had refused to allow the Committee to borrow money for new plant.

Mr. Henry Bell (the Chairman of the Finance Committee) said if an undertaking in the course of an extension of its business spent £20,000 capital, and the £20,000 came out of the revenue, what became of the shareholders? The policy adopted generally in commercial undertakings where extensions were wanted for capital purposes was to increase the capital by borrowing. If the Gas Committee had applied the whole of the profits towards the reduction of the capital account, the town would be saddled in the coming year with very high rates indeed; and nothing tended to drive commercial enterprise out of a town so much as high rates. The money handed over by the Gas Committee to the Finance Committee last year in aid of the rates was just short of £8000, a reduction of £4000 on the previous year. No one wanted to pay a big price for gas; and the Gas Committee did not want the price fixed at a figure that made its use prohibitive to the manufacturers of the town. But the ratepayers had nearly a quarter of a million invested in the undertaking, and were entitled to some return on the capital; and the 3¼ per cent. that was being returned was a very moderate sum indeed.

Alderman Hopkins said he did not think that a large number of ratepayers who were not gas consumers should have their rates reduced by 1s. in the pound at the expense of the consumers.

Alderman Green pointed out that the question of the sinking fund seemed to have been entirely overlooked. In that respect the Corporation differed from any private company. Money borrowed had to be repaid by a certain number of annual instalments; and while last year they still had to repay borrowed money, the Government would not allow them to take up any fresh money to put in new plant. The increase in the price of gas only corresponded with the increase in the price of coal. He did not believe in giving every penny in relief of rates; but the town's credit constituted the capital of the concern. The town borrowed the money, and was responsible for repayment.

The Mayor said the Borough Treasurer had called his attention to the fact that all the profits had not been applied in the reduction of rates. In 1911 as much as £6842 was placed to the reserve. This amount had gradually been absorbed; but still it had not been the policy of the Committee to pay every penny in relief of rates.

Mr. Winter remarked that the same method applied in Manchester as in Stockport. Manchester got £50,000 in relief of rates; and it would be a sorry day for Manchester if ever they stopped this.

The report was adopted.

Gas-Meter Testing.—The annual report of the Public Health Committee of the Middlesex County Council contains a few remarks as to the gas-meter testing-station at Edmonton, which was opened in July, 1900, as the result of an agreement entered into between the Middlesex County Council and Messrs. Thomas Glover and Co. Messrs. Glover and Co. were desirous of having gas-meters manufactured by them tested and stamped in close proximity to their factory at Edmonton; and, on their undertaking to make good any loss which might fall upon the County Council, the Sale of Gas Acts were adopted, and a testing-station opened. The income in excess of expenditure in respect of the testing-station during the past twelve months amounted to £815; and the total amount which has gone in aid of the county rate since the station was first opened is £13,944. A statement giving details of the meters stamped during the year to March 31 last shows that altogether there were 80,731 meters received from makers, gas companies, and consumers. Of this number, 75,072 were stamped and 5659 were rejected. The size of the meters varied from 1 to 1000 lights.

NOTES FROM SCOTLAND.

From Our Own Correspondents.

Saturday.

The accounts of the Edinburgh and Leith gas undertaking for the year ended May 15, which have now been passed by the Commissioners, were fully dealt with in the report upon them of the Treasurer (Mr. A. Canning Williams), given in the "JOURNAL" a fortnight ago, p. 205. In submitting them, Bailie Lyon (President of the Finance and Law Committee) said the accounts showed that the gross profit amounted to £85,350, which was £10,242 less than the amount estimated in September last; the difference being due to a decrease in income of £8254, and an increase in expenditure of £1988. The charges for annuities and mortgage interest, and the contributions to the sinking and reserve funds (reduced, in the case of the special reserve fund, from 2d. to ¾d. per 1000 cubic feet of gas sold) amounted to £101,874, or £16,524 in excess of the profit. Deducting from this sum the balance of surplus revenue brought from the previous year, the net deficiency stood at £10,023, which the Commissioners had decided to make good out of the general reserve fund. The profit had not come up to expectations, owing to a small reduction in the sale of gas (1·53 per cent.), a considerable falling-off in the returns from coke and tar, and special expenditure due to the war. The quantity of gas sold during the year was 1,988,328,500 cubic feet, the largest amount in any year except 1913-14, when it was 30,913,200 cubic feet higher. If it had not been for the greatly restricted public lighting, due to military precautions, which had effected a reduction of consumption by the public lamps of 31,971,800 cubic feet (38 per cent.), there would have been a slight increase in the sale. The amount paid in war service allowances during the nine months to Whitsunday was £4010.

The working statement shows that the quantity of coal carbonized and oil equivalent was 192,273 tons, with a make of gas of 2,115,981,000 cubic feet, or 11,005 cubic feet per ton. The percentage of gas unaccounted for was 5·34. The total number of consumers was 100,454, and the average price of gas per 1000 cubic feet 2s. 7·28d. net. There is a total length of mains of 444½ miles; and the public lamps number 12,305. At May 15, there were 17,735 gas-cookers on free loan, and 7309 gas fires and radiators on simple hire. The average cost of coal and oil equivalent per ton for the year was 12s. 6·76d., and per 1000 cubic feet of gas made 1s. 1·76d.

Owing to the large number of male lamplighters who have volunteered for army service, women are now employed by the Lighting Committee of the Glasgow Corporation; and a group of them have been photographed by the local "Daily Record and Mail." A thoroughly businesslike looking group they make, too, with their ladders, lanterns, and official caps. Only a month has elapsed since women started to do this work; and already there are 110 of them employed as lamplighters in the city and suburbs. They earn a minimum wage of 17s. for a working week of some 25 hours. They do not attend to the street lamplighting, but confine their attention to the stair lamps. The report is that they are giving every satisfaction to the superintendents—being punctual and efficient in the discharge of their duties.

Approval has been given of the new rates for gas in Glasgow. The domestic charge is 2s. 6d. per 1000 cubic feet for quantities up to 500,000 cubic feet, with reductions to 2s. 3d. per 1000 for excess quantities; and less rates for power and manufacturing purposes, and for hotels, clubs, and institutions. It was stated by a member of the Gas Committee that they were supplying gas in some instances at less than cost price. Fully 60 per cent. of the consumers are paying at the higher rate, while 40 per cent. are having gas at lower rates.

The annual report on the working of the Airdrie Corporation Gas-Works for 1914-15 was submitted to a meeting of the Town Council last Thursday by Mr. J. W. M'Lusky, the new Manager. The report stated that the quantity of gas manufactured during the year was 118,376,000 cubic feet—a decrease of 640,000 cubic feet, or 0·57 per cent. The quantity of gas made per ton of coal carbonized was 11,465 cubic feet. Considering the difficulties experienced in getting regular deliveries of coal, along with the fact that frequently complaint had to be made of the bad quality supplied, it was gratifying to find that such high carbonizing results had been obtained, almost equalling the record result (11,500 cubic feet) of the previous year. The total quantity of gas sold was 103,755,620 feet, a decrease of 2,279,580 feet, or 2·16 per cent. Unaccounted-for gas was 8,508,000 cubic feet, or 7·18 per cent.; a slight increase being due no doubt to the fact that during the year over 1200 yards of 6-inch high-pressure main were laid, on which frequent tests had to be made. The revenue amounted to £19,507, as compared with £20,771. Of this decrease, £716 was due to the reduction in gas sales, and £155 to the fact that the price of gas from the May to August quarter of 1914 was 2d. less than the price charged for the corresponding quarter of the previous year. Coke had brought in £459 less. The total expenditure under revenue account amounted to £14,892, a decrease of £1379. There was a decrease, or saving, in the manufacturing charges of £289. There was a surplus balance of £4615 to be carried to the credit of net revenue account to meet the annual standing charges; a sum of £26 carried forward from the previous year, and £16 of interest on money in bank—making the total at the credit of this account £4659. The total expenditure under the net revenue account was £6178, an increase of £402. This left a debit balance of £1519 to be carried forward to next year. Bailie Goldie (the Convener) moved the adoption of the report, and also the recommendation of the Gas-Works Committee that the charge for gas be increased by 5d. per 1000 cubic feet, making the price 3s. 4d. This was unanimously agreed to.

The Peterhead Town Council had before them at their monthly meeting last Tuesday a minute of the Gas Committee in which it was stated that the members had unanimously resolved to fix the price of gas at 4s. 2d. per 1000 cubic feet for consumers by ordinary meter, and at 4s. 4d. for consumers by prepayment meter—an increase of 6d. per 1000 cubic feet. Mr. Dingwall, in moving the adoption of the minute, said every gas consumer would be disappointed; but no thinking person would be surprised to learn that the past year, or, at any rate, since last August, had been the worst for many years for gas departments all over the country, and particularly for a seaport town like their own. The quantity of coal in hand or to be delivered at May was 3000 tons at last year's prices, which meant that they had only one half-year's supply to contract for at the advanced price—a saving of £1173. He felt it his duty to state publicly that consumers had to give Mr. W. Ritchie (the Gas Manager) most of the credit for this saving, as it was entirely on his advice that the Committee last year purchased about 2000 tons more coal than usual; and they scored handsomely.

The Loanhead Gas Company are paying a dividend of 7½ per cent.

The Glasgow Smoke Abatement Exhibition, which was to have been opened next month (September) has been postponed—many potential exhibitors being engaged in the manufacture of munitions.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Aug* 9.

There is nothing new to report in the London tar products market, and prices remain steady. Creosote is still in strong demand both for the home and export trade, and the price to-day is considered to be 4¼d. net per gallon in bulk at makers' works. Benzol, solvent naphtha, and naphthalenes are also in good demand.

The value of sulphate of ammonia still remains at £14 8s. 9d. net per ton, filled into buyers' bags at makers' works, for 25 per cent. quality.

Tar Products in the Provinces.

Aug. 9.

The markets for tar products have remained fairly steady throughout the past week. There is very little new business to report in pitch. Buyers abroad expect to purchase at lower than the quotations which are being made at the present moment. Solvent and heavy naphthas are in fair demand, and prices keep pretty firm. Creosote is quiet, and sales are reported at very reasonable prices. Some business is reported in crude carbolic on the basis of 3s. 6d. to 3s. 7d. naked at makers' works.

The average values of gas-works products during the past week were: Gas-works coal tar, 21s. 6d. to 25s. 6d. Pitch, East Coast, 22s. to 23s. per ton; Norfolk, Suffolk, and Humber ports, 19s. to 20s.; West Coast, 20s. to 21s. Manchester; 21s. to 21s. 6d. Liverpool; 23s. Clyde. Benzol, 90 per cent., naked, North, 10½d. to 11d.; 50-90 per cent., naked, North, 1s. 3d. to 1s. 4d. Toluol, naked, North, 2s. 2d. to 2s. 4d. Crude naphtha, in bulk, North, 6d. to 6½d. Solvent naphtha, naked, North, 1s. 10d. to 1s. 11d. Heavy naphtha, naked, North, 1s. 2d. to 1s. 3d. Creosote, in bulk, North, 3d. to 3 15/16d. Heavy oils, in bulk, 3¾d. to 4d. Carbolic acid, casks included, 60 per cent., East and West Coasts, 3s. 6d. Naphthalene, £8 to £16; salts, 75s. to 80s., bags included. Anthracene, "A" quality, 2d. to 2½d. per unit; "B" quality, nominally ¾d.

Sulphate of Ammonia in the Provinces.

LIVERPOOL, *Aug.* 7.

The paucity of new business and the difficulties experienced in making shipments against orders already booked have now had the effect of weakening the tone of the market, and during the past week lower prices have been accepted for near delivery. The closing quotations are £14 12s 6d. per ton f.o.b. Hull, £14 13s. 9d. f.o.b. Liverpool, and £14 17s. 6d. f.o.b. Leith. For October-March delivery, producers still require £15 2s. 6d. to £15 5s. per ton, according to port of shipment; but there are no buyers at these figures, and it is reported that middlemen are offering at 2s. 6d. per ton less money.

Nitrate of Soda.

The market for this article is firmer on spot, and holders now require 12s. 6d. per cwt. for ordinary quality, and 12s. 9d. for refined.

Sulphate of Ammonia.

From another source it is reported that there has been a slight lull in the market for this article during the past week. However, lower prices have not been heard of as having been accepted yet. Outside London, makes are quoted at £13 5s.; Hull, £14 15s.; Liverpool, £14 17s. 6d; Leith, £15; Middlesbrough, £14 15s.

COAL TRADE REPORT.

Northern Coal Trade.

The coal trade is active for prompt business; but forward sales are influenced by the expected effect of the new export regulations after the middle of this month. In the steam coal trade, the demand is at present steady. For best Northumbrian steams, the current quotation is from 21s. to 21s. 6d. per ton f.o.b.; second-class steams are about 16s. 6d. per ton; and steam smalls vary from 13s. to 15s per ton. Production is well maintained, and at present is taken up readily. In the gas coal trade, there is a slow increase in the local consumption; and the shipments to the South of England are good under the circumstances. Best Durham gas coals are generally quoted from 20s. to 21s. per ton f.o.b.; second-class qualities are about 17s. to 17s. 6d. per ton; and "Wear Specials" are steady at 22s. to 22s. 6d. per ton f.o.b. Deliveries on the long contracts appear to be sent out more freely; and though enlistment is still lessening the number of the miners, their work is more regular generally for those remaining in the industry. Coal freights are rather easier, with a basis of about 7s. to 7s. 1½d. for gas coal from the Tyne to London. Coke is steady and is not plentiful. Gas coke seems in good demand, and the quotation is about 27s. per ton f.o.b. in the Tyne. Some producers are also raising the local price for good makes.

Littleborough Gas Company.

The half-yearly meeting of this Company was held last Thursday—Mr. J. C. Hudson in the chair. A dividend of 10 per cent. per annum (less income-tax) was declared. The net gas sales increased in the last six months from £4742 to £4986; and residuals realized £1582, compared with £1505 last year. The revenue profit (£1336, against £1384) was considered satisfactory, in face of the abnormal conditions in prices of raw material and costs for labour, rating, &c. An increase of 2 million cubic feet (5½ per cent.) was reported; and half of the increase was said to be due to the extended use of gas fires and cookers, and also prepayment meters. Since a cash discount was allowed for slot consumers, the average consumption per meter has shown a satisfactory increase, and the summer consumption has more than doubled since 1905. The gas made during the past twelve months was 81 million cubic feet, compared with 78 millions last year, and 47 millions ten years ago. The shareholders expressed their satisfaction, and thanks were accorded to the Directors, to the Manager and Secretary (Mr. S. E. Halliwell), and to the staff.

Sidmouth Gas-Works Results.

At a meeting of the Sidmouth Urban Council last Tuesday, the Chairman reported that they had completed the first year's working of the gas undertaking under the Council; and, from their standpoint, the concern had, as nearly as possible, lost £1000. This statement, however, needed qualification. Principal had been repaid to the extent of £600 on the long loan of 35 years; and in the £1000 they had also to allow for the repayment of £425 on the short loan. Personally, he thought the undertaking would have shown a very different result had it not been for the position they were placed in owing to the war. He understood that, owing to the increased cost of material and the smaller price of tar, they had lost £380. Besides this, they had the further loss of gas consumption. If these things were considered, they would not find much cause for discouragement. He did not think, however, that it would be businesslike for the Council to go on after this year without making some sort of charge on the rates to keep the undertaking going. The expenditure in connection with the works would be cut down wherever possible. He believed the crisis in connection with the gas undertaking was passed, and that in the coming year, with the increased number of slot-meter consumers, the results would be very different.

Lincoln Gas Coal Contracts.

Some information relative to coal contracts was forthcoming at a meeting of the Lincoln City Council, last Tuesday evening, when Mr. Taylor directed attention to a paragraph in the report of the Gas Committee which set forth that the Manager (Mr. W. H. Mainwaring) had reported that if the Corporation would release the Sheffield Coal Company from their obligation to supply 770 tons of coal under their old contract, the Company were prepared to reduce the price for the supply of 2000 tons of coal under the proposed new contract by a certain sum per ton less than that stated in their tender. The Committee had decided to accept the offer; but Mr. Taylor desired to ascertain from the Chairman his view as to whether a new situation had not been created by the Bill for limiting the price of coal. He thought the Lincoln ratepayers were under an obligation to other municipalities for having been a little more energetic than their own representatives in bringing pressure to bear in relation to the coal question, and prevailing upon the Government to bring in such a Bill. Alderman Wallis (the Chairman of the Committee) replied that he did not think the Government Bill would make the slightest difference to the arrangement their Gas Committee had entered into. His own view was that the Council had acted very wisely in the course which they had taken in buying coal. He should have been sorry if they had been among those who recommended that no contracts should be entered into, and that they should wait to see what the Government intended doing. Those who had not purchased coal were likely to find themselves in a difficulty later on. The arrangement proposed was a good one, and would turn out satisfactorily to the Corporation.

The South Suburban Meter-Rent Fiasco.

Under the heading of a "Scheme that Failed," the "Star"—the London paper that led the recent agitation against the suggested raising of meter-rents in the South Suburban Gas Company's district—last Wednesday, wrote as follows: The Directors of the South Suburban Gas Company, disappointed in their contemplated raid on meter-rents, have issued a delightful circular to their customers. It is as follows:—

METER-RENT.

> I am desired by my Directors to convey their thanks to the great number of consumers, who by signing the new agreement have recognized the fairness of the proposed advance on the present charge for meter-rent.
>
> A relatively small number of consumers have, however, objected; and the Directors do not now propose to make the change.
>
> By order of the Board,
>
> WILFRID WASTELL, Secretary.

We ["Star"] have no means, of course, of checking these statements; but if the great number of consumers have recognized that it is fair their meter-rents should be doubled without notice, they are more guileless than we should have expected. As to the "relatively small number of consumers" who have objected, that again we take with a grain of salt. The Directors do not propose to make the change simply because they can't. As the "Star" pointed out at the beginning, the consumers had the matter in their own hands; and if they refused to sign the artful circulars, the Company could not raise the meter-rents. No doubt it was anticipated that this little scheme would go through quietly while people's minds were being concentrated on the war. But the scheme has failed.

War Bonus Question at Oldham.

Recently it was reported [*ante*, p. 45] that the Special Committee of the Oldham Corporation appointed last March to consider applications which had been submitted by the Municipal Employees' Association and the Gas Workers' Union for an all-round advance of wages to be made to cover the extra cost of living, had re-affirmed their decision not to recommend the Council to grant war bonuses. They pointed out that the applications had previously been refused on the grounds that, generally speaking, the Corporation employees received quite as good wages as, if not better than, were paid by private employers in the town; that they were in receipt of regular weekly wages with practically no deduction for compulsory short time; and that if the increase was given it would have to be borne to some extent by many ratepayers who were not as well circumstanced as the Corporation employees. At a mass meeting of the employees last Monday week, it was practically unanimously agreed to press forward the original claim for 5s. per week advance, though it was hinted that something less than this would be accepted. Mr. J. R. Clynes, M.P. (the General Secretary of the Union), was urged to demand an early settlement of the question or arbitration. Failing this, it was announced that strike notices would be tendered. On Wednesday, Mr. Clynes despatched a letter to the Town Clerk, in which he expressed willingness to leave the matter to a decision of a town's meeting; the writer giving an undertaking that no Corporation men should attend it. A step in the direction of a peaceful settlement of the question was taken on Thursday night, when a special Council meeting was held, and it was decided to invite Mr. Clynes and a small deputation to attend a further meeting of the Special Committee on Thursday next, to further consider the question. This is regarded as promising for a settlement of the whole matter.

Proposed New Water-Main at Plymouth.

Mr. F. Howarth, the Water Engineer to the Plymouth Corporation, has presented to his Committee a report on the necessity of proceeding immediately with the execution of the scheme for increasing the means of conveying water to the borough. The question has been before Parliament in the present session; and the necessary powers have been given. Mr. Howarth points out that the carrying capacity of the existing 25-inch trunk main, from the Burrator storage reservoir, which was laid about twenty years ago, has been reduced by incrustation from 7¾ to 5¾ million gallons per day, or a reduction of over 25 per cent. There is a second main which forms part of the late Devonport Corporation Water-Works. This will carry 5 million gallons. But the supply available for it is dependent upon the dry weather flow of the rivers by which it is fed; and the average summer flow is estimated at about 2¾ million gallons per day. In a dry summer the deficiency will reach 2 million gallons a day; and as the storage available in the service reservoirs near the town is only 50 million gallons, there is grave risk of a water famine. In estimating the needs for which provision should be made, Mr. Howarth says that thirty years is the shortest period which should be considered. The population of the district within the limits of supply will by that time be about 300,000; and at the present summer rate of consumption (47·8 gallons per head), the requirements will be 14,340,000 gallons per day. A pipe-line across country alongside the existing 25-inch main, a distance of 4½ miles, could be in operation in about nine months; and as no time should be lost, Mr. Howarth favours this plan. He suggests that the diameter of the new main shall be 33 inches, which will carry, when new, 14½ million gallons per day. The cost is estimated at £59,340. A term of sixty years has been granted by Parliament for repayment; and the Treasury have sanctioned the raising of the money, provided the Corporation do not go into the open market for it, but use their own sinking funds.

Street Lighting at Hoddesdon.—It was reported at a meeting of the Hoddesdon Urban District Council that a tender had been received from the Gas Company for the lighting of the street-lamps from the 1st inst. to May 31, 1916, inclusive. The price was £2 7s. per burner, with an additional charge of £2 4s. per burner for any lamps lighted the whole of the night all the year to July 31, and a charge of 11s. 3d. per burner for each lamp lighted during the months of June and July. A proportionate deduction would be made in the case of lamps not being lighted. The offer was accepted.

Rathmines Gas Lighting.—At a meeting last week of the Rathmines (Dublin) Urban Council, it was recommended by the Lighting Committee that a contract be prepared embodying terms to be agreed to by the Alliance and Dublin Consumers' Gas Company for the alteration and repair of lamps at 16s. 3d. each, with a maintenance fee of 25s. per lamp; the charge for lighting to be £2 2s. per annum, and the contract to be for three years, with 350 lamps as a minimum number. Mr. Carruthers (the Chairman of the Committee) explained that under the old contract they paid £2 10s. per lamp for 4000 hours, and under the new contract the charge for a like number of hours would be £2 18s. The Committee, however, desired to economize, and thought they would only light the lamps for 3000 hours, so reducing the cost to £2 2s. After discussion, the matter was referred back for further consideration and report.

Cambridge University and Town Gas Company.—Notwithstanding a large drop in the receipts from public lighting, the Company have had a successful half year; the Chairman (Mr. E. H. Parker) pointing out, at last week's meeting, that the consumption of gas was greater by 9½ million cubic feet than in the corresponding period of 1914—the increase being largely due to the presence of troops in the town. Of the 52 employees on active seraice, two have been killed, two wounded, and one is a prisoner. New coal contracts have been made at an advance of 6s. per ton, which accounts for the increase in the price of gas which the Board have been compelled to make. In emphasizing the debt the Company owe to the Manager (Mr. J. W. Auchterlonie), the Chairman said they had every confidence that each difficulty as it arose would be successfully overcome by his ability and care, assisted by an excellent staff in all departments. The report was adopted; and a dividend at the usual rates was declared.

Devonport Gas-Works Profit.—A statement of the result of the working of the gas undertaking at Devonport for the year ended March 31, was presented to the Plymouth Corporation Gas Committee last Thursday. The gross profit was £22,019, and the net profit £4122, compared with £21,115 and £2710 in the preceding year. The Committee decided to carry the net profit to the reserve fund.

Wolstanton Gas Undertaking.—With an increase in the quantity of gas made last year at Wolstanton of 134,000 cubic feet, there was a reduction of 46 tons in the quantity of coal carbonized. A lowering of the price of gas and diminished returns from residuals resulted in a drop of £314 in revenue; the gross profit falling from £5535 to £5227. In a period of seven years, about 30 per cent. of the loans have been repaid. At the May meeting of the Gas Committee, it was decided to increase the price of gas 2d. per 1000 cubic feet; but in his report the Manager (Mr. J. H. Woolliscroft) expresses the opinion that there was no need to take this course.

Increased Charges at Kensington.—The Works Committee of the Kensington Borough Council have considered a letter received from the Gas Light and Coke Company, stating that the price of gas supplied to the public lamps has been increased from Lady-day 8d. per 1000 cubic feet—that is, 2s. 2d. to 2s. 10d. Under the provisions of the Statutes governing this matter, the Committee remark, the price for gas for street lighting purposes in the borough cannot be higher than the charge for gas supplied to private consumers in the area of the South Metropolitan Gas Company. The latter charge was increased from 2s. 4d. to 2s. 10d. as from the meter-readings at Lady-day, so that the Gas Light and Coke Company, in increasing the charge for gas supplied to the Council's street-lamps from 2s. 2d. to 2s. 10d., are levying the maximum amount they are entitled to charge.

Exmouth Gas Company and the District Council.—A dispute has arisen between the Exmouth Gas Company and the Urban District Council as to the charge for public lighting; the Council claiming a deduction from the account on the ground that certain lamps were not lighted owing to restrictions imposed by the military authorities. A Committee was appointed to confer with the Directors of the Company. The Directors were, however, unwilling to meet these gentlemen, because they were not given power to settle the matter, but only report the result of their interview to the Council. As an alternative, the Directors suggested that the charges should be referred to the arbitration of a competent accountant; and they invited the Council to nominate persons possessing the necessary qualifications, one of whom might be chosen as Arbitrator. This was considered by the Council at their meeting last week; but on the recommendation of the Finance Committee it was not entertained. The Directors had informed the Committee that they did not expect to be paid for gas which had not been consumed; and the Committee recommended that the account be returned to the Company, and that they be asked to amend it in accordance with existing conditions. It was decided that this course should be taken, and that the Committee have full power to act.

Women Meter-Index Readers.—The August number of the "Co-Partnership Journal of the South Metropolitan Gas Company" has as a frontispiece a reproduction of a photographic group of fifteen women workers as meter-index readers in the Company's various districts. Referring to the group, it is mentioned that, in consequence of the absence on Imperial Service of nearly two thousand co-partners, it was, after careful deliberation, determined to have recourse to "female labour for certain work for which the special faculties of the sterner sex are not needed." It is stated that these women employees do their work efficiently and tactfully, and are well received by the consumers.

Grantham Gas Company.—Mr. J. G. Thompson, who presided at the half-yearly meeting of this Company, referred to the abnormal conditions created by the war, and difficulties entailed by the enhanced price of coal. The accounts showed a balance of £2922; and out of this sum the Directors recommended the payment of a dividend of 5 per cent. per annum (less income-tax), carrying forward the surplus. The increase in the price of coal and of other requirements of the Company, coupled with the decrease in the value of tar and ammoniacal liquor, rendered it necessary to augment the income of the Company; but regarding it as possible that the great increase in the price of coal might only be of a temporary character, the Directors proposed, instead of raising the price of gas, to charge the consumers temporarily with a war premium to the extent of 10 per cent. on their accounts, this charge to commence on Oct. 1. The report was agreed to.

Wandsworth, Wimbledon, and Epsom District Gas Company.—The Directors will report at the half-yearly meeting of the Company next Tuesday that, for the six months ended June 30, the revenue account shows a profit of £30,120. After providing for the interest on debenture bonds and stocks, and on deposits and loans, there remains to the credit of the profit and loss (net revenue) account, with the addition of the balance brought forward, an amount of £23,641. The Directors recommend that dividends be declared at the statutory rates as follows: On the Wandsworth "A" stock, £7 17s. 6d.; on the Wandsworth "B" stock, £6 7s. 6d.; on the Wandsworth "C" stock, £5 10s. 3d.; on the Wimbledon stock, £5 15s.; on the Epsom stock, £6 7s. 6d.; and on the new ordinary stock, £5 10s. 3d. per cent. per annum. The decreases in the rates of dividends are due to the increase in the price of gas in accordance with the sliding-scale. These dividends absorb the whole of the balance, together with £5050 from the reserve fund. The Directors regret to report that they have had to increase the price of gas by 4d. per 1000 cubic feet from Lady-day, 1915. This increase has become necessary by reason of the higher prices paid for coals under the new contracts, the difficulty of obtaining due supplies, the advanced prices of all materials, the extra cost of labour, the large war bonus payments, and allowances to dependants of employees serving with the Colours. The sale of gas in the half year shows a small decrease of 0·8 per cent., compared with the corresponding period of 1914.

Careful attention will be given to YOUR enquiries.

R. & J. DEMPSTER, Ltd., MANCHESTER.

London Office:
165, GRESHAM HOUSE,
Old Broad St., E.C.

Price of Gas at Pontefract.—The accounts of the Gas Committee of the Pontefract Town Council for the year ended March 31 showed a profit of £535; and the Committee recommended that the price of gas be increased from 2s. 11d. to 3s. 3d. per 1000 cubic feet. The Chairman (Mr. C. Pease) stated in the Town Council that this was calculated on the cost of coal being increased by 6s. a ton; and on the Mayor pointing out that the rise would be limited by the new Act to 4s., the proposal was referred back to the Committee.

Increase of Price at Wantage.—Reporting at a meeting of the Wantage Urban District Council, the Gas Committee, owing to the increased cost of coal and labour, recommended an increase in the price of gas, to take effect from Oct. 1, of 5d. per 1000 cubic feet. In moving the adoption of the report, Mr. A. J. Belcher remarked that the Committee were sorry, having reduced the price of gas, to find that they were compelled to make another increase. The fact was they had to pay 5s. per ton extra for coal, which meant a cost of £400, equalling 7½d. per 1000 cubic feet. If the Government stepped in and lowered the price of coal, they would again recommend a reduction. The report was adopted.

Bolton Gas Committee and Employees' War Allowances.—There was a long discussion at the monthly meeting of the Bolton Town Council regarding employees of the Corporation obtaining permission before they enlisted. It arose out of a decision of the Gas Committee not to give any allowance to the dependants of one of their workmen who had enlisted, because he had not received the permission of the Gas Engineer (Mr. W. Smith). Alderman Horridge explained that the man in question joined the Colours after hearing him (the speaker) make an appeal for recruits; and because he had not obtained the permission of the Engineer, his wife and children had to go without the Corporation allowance. He considered that the Committee were retarding recruiting; and he moved an amendment that the man be given the allowance. In the course of the discussion it was repeatedly pointed out that the Council had decided not to grant the allowance unless permission to enlist had been granted. The amendment, however, was carried.

Sale of Shares.—At a local auction sale last week, Mr. F. W. Baker offered 500 additional £10 shares in the Frimley and Farnborough District Water-Works Company. The total amount realized by the sale was £7351; the average price per share being in the neighbourhood of £14 14s.

Helston Street Lighting.—Reference was made at the last meeting of the Helston Town Council to correspondence which had passed between the Council and the Gas Company on the subject of the account for public lighting. The Council claimed a reduction in the charge owing to the lamps being unlit; and the Manager of the Company (the late Mr. John Gill) offered to allow £1 5s. per week for 32 weeks. This was considered inadequate by the Council; but the present Manager (Mr. S. J. Ingram) gave details as to the cost of gas, maintenance of lanterns, &c., and expressed the opinion that Mr. Gill had been most generous in his offer. The Surveyor said he estimated that the actual saving to the Company was £2 per week, which would amount to £64 for the 32 weeks, against £40 offered by the Company. It was decided to appoint a Committee to arrange matters.

Lighting Matters at Cheshunt.—At a meeting of the Cheshunt Urban District Council, it was reported that the Gas Company had, in view of the deterioration of the lanterns and burners left in the street-lamps not lighted, applied to the police authorities to allow all public lamps to be lighted in the usual way, provided the tops and three parts of the side-glasses were blacked-over. The Commissioner of Police had, however, replied to the effect that, from a police point of view, the present lighting met all requirements. The Surveyor said he had seen the Gas Company, and discussed whether, considering the amount paid for public lighting and the number of lamps not lit, any of the work done to the lamps could be dispensed with, and, if so, what rebate the Company would be prepared to make. Only 46 of the 348 lamps in the district were lighted. The allowance of 1s. 9d. per lamp per quarter offered by the Company would amount to £26. It was suggested that the Company should be allowed to remove the lamps, burners, &c.—the Council giving storage facilities free of charge. The Company are to be further approached.

GAS COMPANIES IN THE STOCK EXCHANGE.

Upon the Stock Exchange last week the general tone was fairly good, and seemingly it was unaffected by the news of the fall of Warsaw. The chief interest lay in the opening of the market to dealings in the War Loan *ex* conversion rights. Considerable advantage was taken of this opening, and the aggregate of transactions fully came up to previously formed expectations. The price at the close of the first day was 98¼; and it varied but little—being about 98¼ at the finish of the week. In the other markets, the prominent features were the continued weakness of Home Rails, and, on the other hand, the advance of Americans. South Africans and Foreign exhibited some good points; while, among the Miscellaneous group, concerns dealing in anything contributing to munitions and appliances of war (especially some Canadian undertakings) were in excellent demand. An incident in the Railway Market was the issue of the North-Western Company's prospectus inviting subscriptions for £1,500,000 of 4½ per cent. preference stock at 96, redeemable at par in 1925—an attractive offer. Business in the Gas Market was of the most meagre proportions; the bargains recorded being too few in number to call for a daily detail. The figures realized showed for the most part no change. But in illustration of how much hap-hazard there is in these bargains where no minimum price exists, it may be noted that a parcel of fully secured debenture stock of a Metropolitan company was sold at about a 5¼ per cent. price, while the ordinary 5 per cent. maximum stock of a provincial company was done at par. The South Metropolitan Gas Company are offering £100,000 ordinary stock to consumers at 82, which, at the present statutory rate of dividend, will return 5⅛ per cent. for money. This seems a tempting offer. In the Money Market, there was a good demand, coupled with an ample supply, and discount rates were easier. Welcome is the action taken recently by the banks in being less lavish with gold over the counter to the public. The conservation of the country's gold and the rigorous substitution of notes is a necessity.

The Bank rate is 5 per cent.—as fixed on Aug. 8, 1914.

LOWEST AND HIGHEST PRICES OF BARGAINS DONE FOR CASH IN THE WEEK ENDING AUG. 7.

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices. July 30.	Yield on Highest Closing Price.	Lowest and Highest Prices of Bargains.
£			p.c.			£ s. d.	
1,551,868	Stk.	April 8	2½	Alliance & Dublin Ord.	59—64	3 18 2	..
374,000	,,	July 10	4	Do. 4 p.c. Deb.	76—79	5 1 3	..
280,000	5	April 29	7½	Bombay, Ltd.	5⅞—6⅞	5 17 8	..
50,000	10	Feb. 26	16	Bournemouth Gas and Water — 10 p.c.	29—30	5 6 8	..
373,480	10	,,	7	Bournemouth Gas and Water — B 7 p.c.	15—15½	4 10 4	..
95,000	10	,,	6	Bournemouth Gas and Water — Pref. 6 p.c.	13½—14	4 5 9	..
—	—	—	—	Bournemouth Gas and Water — Deb.	..	—	75—75½
380,000	Stk.	Feb. 26	14	Brentford Consolidated	261—266	5 5 3	98—98⅝
330,000	,,	,,	11	Do. New	204—209	5 5 3	..
50,000	,,	,,	5	Do. 5 p.c. Pref.	109—111	4 10 1	..
206,250	,,	June 11	4	Do. 4 p.c. Deb.	91—93	4 6 0	..
217,380	Stk.	Feb. 26	11	Brighton & Hove Orig.	208—213	5 3 4	..
244,200	,,	,,	8	Do. A Ord. Stk.	154—159	5 0 8	..
530,000	20	Mar. 26	12½	British	44—45	5 11 1	..
120,000	Stk.	June 26	4	Do. 4 p.c. Deb. Stk.	88—90	4 8 11	..
245,771	Stk.	June 26	4	Buenos Ayres 4 p.c. Deb.	85—87	4 12 0	..
100,000	10	—	—	Cape Town & Dis., Ltd.	1½—2½	—	..
100,000	10	—	—	Do. 4½ p.c. Pref.	4—6	—	..
100,000	Stk.	June 26	4½	Do. 4½ p.c. Deb. Stk.	70—75	6 0 0	..
157,150	Stk.	Feb. 26	5	Chester 5 p.c. Ord.	108—110	4 10 11	..
1,513,280	Stk.	Feb. 12	5/9/4	Commercial 4 p.c. Stk.	106—108	5 1 2	89—89½
560,000	,,	,,	5½	Do. 3½ p.c. do.	103—105	5 1 6	..
475,000	,,	June 11	3	Do. 3 p.c. Deb. Stk.	69½—71½	4 3 11	55
800 000	Stk.	,,	4	Continental Union, Ltd.	76—79	5 1 3	..
300 000	,,	,,	7	Do. 7 p.c. Pref.	115—118	5 18 8	..
—	—	—	—	Croydon B and C 7 p.c.	..	—	..
492,270	Stk.	—	6	Derby Con. Stk.	123—125	4 16 0	..
55,000	,,	—	4	Do. Deb. Stk.	102—104	3 16 11	..
1,002,180	10	July 29	10	European, Ltd.	17½—18	5 11 1	..
16,362,910	Stk.	Feb. 12	4/17/4	Gas and Light and Coke — 4 p.c. Ord.	98—102	4 15 6	80—81½
2,600,000	,,	,,	3½	Gas and Light and Coke — 3½ p.c. max.	76—79	4 8 7	..
4,062,235	,,	,,	4	Gas and Light and Coke — 4 p.c. Con. Pref.	96—99	4 0 10	72
4,674,850	,,	June 11	3	Gas and Light and Coke — 3 p.c. Con. Deb.	72½—74½	4 0 6	60½—62½
130,000	,,	,,	10	Gas and Light and Coke — 10 p.c. Bonds	..	—	..
258,740	Stk.	Mar. 12	5	Hastings & St. L. 3½ p.c.	87—89	5 12 4	..
70,000	10	April 29	11	Hongkong & China, Ltd.	16½—16⅝	6 11 4	..
—	—	—	—	Hornsey 7 p.c.	..	—	..
131,000	Stk.	Mar. 12	7⅞†	Ilford A and C	151—154	5 2 4	..
65,780	,,	,,	6⅜†	Do. B	115—118	5 8 0	..
65,500	,,	June 26	4	Do. 4 p.c. Deb.	92—94	4 5 1	..
4,940,000	Stk.	May 14	9	Imperial Continental	150—160	5 12 6	..
1,235,000	Stk.	Feb. 12	3½	Do. 3½ p.c. Deb. Red.	84—86	4 1 5	..
200,242	Stk.	Mar. 12	6½	Lea Bridge Ord. 5 p.c.	119—121	5 7 5	..
561,000	Stk.	Feb. 26	10	Liverpool 5 p.c. Ord. A	211—213	4 13 11	..
718,100	,,	,,	7	Liverpool 5 p.c. Ord. B	146—14	4 14 7	..
309,083	,,	June 26	4	Do. 4 p.c. Pr. Deb. Stk.	..	—	—

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices. July 30.	Yield on Highest Closing Price.	Lowest and Highest Prices of Bargains.
£			p.c.			£ s. d.	
75,000	5	June 11	6	Malta & Mediterranean	4¼—4⅝	6 9 9	..
250,000	100	April 1	4½	Met. of Melbourne 4½ p.c. Deb.	99—101	4 9 1	..
541,920	20	May 28	4	Monte Video, Ltd.	11½—12	6 13 4	..
1,775,892	Stk.	July 29	4½	Newc'tle&G'tesh'd Con.	98½—99½	4 10 6	85*
529,705	Stk.	June 26	3½	Do. 3½ p.c. Deb.	82—83	4 4 10	..
55,940	10	Feb. 26	7/14/0	North Middlesex 7 p.c.	14—15	5 2 8	..
300,000	Stk.	May 14	8	Oriental, Ltd.	117—122	6 11 2	100
60,000	5	Mar. 26	10	Ottoman, Ltd.	7⅛—7⅜	6 9 0	..
60,000	50	Feb. 26	13	Portsea, Island B	128—131	4 19 8	..
100,000	50	,,	12	Do. C	118—121	4 19 2	..
52,000	50	,,	10	Do. D	..	—	..
249,980	5	April 29	8	Primitiva Ord.	5½—6	6 13 4	..
499,960	5	June 26	5	,, 5 p.c. Pref.	4⅝—5	5 0 0	..
521,600	100	June 2	4	,, 4 p.c. Deb.	91—93	4 6 0	..
—	—	—	—	,, ,, ,, 1911	..	—	..
346,198	Stk.	June 26	4	River Plate 4 p.c. Deb.	85—87	4 12 0	..
150,000	10	May 14	6	San Paulo 6 p.c. Pref.	10½—11	5 9 1	..
125,000	50	July 1	5	San Paulo 5 p.c. Deb.	47—49	5 2 0	..
135,000	Stk.	Mar. 12	10	Sheffield A	233—234	4 9 8	..
209,984	,,	,,	10	Do. B	232—234	4 9 8	..
523,500	,,	,,	10	Do. C	230—232	4 10 1	..
90,000	10	May 28	9	South African	10½—11½	7 16 6	..
6,429,895	Stk.	Feb. 12	5/4/0	South Met., 4 p.c. Ord.	111—113	4 16 8	83
1,895,445	,,	July 10	3	Do. 3 p.c. Deb.	72½—74½	4 0 6	60½—61
209,820	Stk.	Feb. 26	8½	South Shields Con. Stk.	157—159	5 6 11	..
952,795	Stk.	Feb. 26	6	S'th Suburb'n Ord. 5 p.c.	114—116	5 3 5	..
60,000	,,	,,	5	Do. 5 p.c. Pref.	110—112	4 9 3	..
—	—	—	—	Do. West Kent.	..	—	..
137,058	,,	June 26	5	Do. 5 p.c. Deb. Stk.	116—118	4 4 9	..
629,740	Stk.	May 14	5	Southampton Ord.	99—102	4 18 0	..
120,000	Stk.	Feb. 12	7½†	Tottenham A 5 p.c.	135—138	5 8 8	..
742,275	,,	,,	6†	Tottenham B 3½ p.c.	115—117	5 2 7	..
181,255	,,	June 26	4	Tottenham District 4 p.c. Deb.	87—89	4 9 11	..
182,380	10	Dec. 30	5	Tuscan, Ltd.	5—6	8 6 8	..
149,900	10	July 1	5	Do. 5 p.c. Deb. Red.	93—95	5 5 3	..
236,476	Stk.	Mar. 12	5	Tynemouth, 5 p.c. max.	108½—109½	4 11 4	..
				Wandsworth, Wimbledon, and Epsom—			
30,000	Stk.	Feb. 26	8⅝	Wandsworth A 5 p.c.	151—156	5 7 4	..
255,636	,,	,,	6⅝	,, B 3½ p.c.	129—134	5 2 7	..
108,075	,,	,,	5/17/3	,, C 3½ p.c.	110—115	5 2 0	..
352,000	,,	,,	6½	Wimbledon 5 p.c.	117—122	5 0 5	..
98,000	,,	,,	6⅝	Epsom 5 p.c.	121—126	5 5 2	..
88,416	,,	June 26	3	3 p.c. Deb. Stk.	66—69	4 6 11	..

* Ex Div.

East Ardsley Gas Company.—The report of the Directors of the East Ardsley Gas Company for the half year ended June 30 shows a profit of £534, and £1759 (including the balance brought forward) to be allocated. This is to be dealt with as follows: A dividend at the rate of 5 per cent. per annum, less tax, on the preference shares, and one of 7 per cent. per annum, free of tax, on the original capital stock—carrying forward £1272.

Burnley Water Scheme and the War.—The Burnley Corporation having asked the Local Government Board to sanction a further loan for the completion of the new water-works now in course of construction at Hurstwood, the Treasury intimated to the Town Clerk their desire that the Corporation should suspend the work until after the war. The Water Committee thereupon decided to ask the Board to receive a deputation on the subject of the urgency of the work and the desirability in these circumstances of sanction being given to further borrowing powers.

New Water Supply for Burbage.—The new water supply for Burbage (Leicestershire) was formally turned on by Mr. Charles Hands, the Chairman of the Water Committee, on Friday week last. Mr. Hands spoke of the necessity for an adequate water supply, and said the cost of the new scheme was estimated at £4400; but he was very pleased to state that the work had been carried out for £3700. He also referred to the satisfactory efforts of Mr. E. H. Crump in engineering the scheme; adding that the work had been in progress eight-and-a half months, and considering the difficulties the Contractors (Messrs. G. Greaves and T. Bradbury) had to contend with, it had been completed most satisfactorily. Had the work been postponed, the villagers would have had to pay considerably more than the actual cost. Mr. Hands then turned on the water, following which the Committee and friends sat down to dinner. Proposing "Success to the New Scheme," Mr. G. Cholerton (the Chairman of the Water Committee of the Hinckley Urban District Council) said, when he thought of the money his authority had spent in connection with the water supply, he was convinced that sooner or later the supplying of small communities with water would have to be undertaken by Parliament. Hinckley had spent something like £45,000 on the schemes. By taking the supply for Hinckley, one more link had been forged in the chain that bound the two places together. Mr. T. Powers (the Chairman of the Highways and Sanitary Committee of the Hinckley Rural District Council) afterwards presented Mr. Hands with a suitably inscribed stopcock as a memento of the occasion.

Mr. A. C. Willyams presided at the half-yearly meeting of the Truro Water Company, when accounts were presented showing a balance of £1281. It was decided to pay a dividend of 5 per cent., and carry forward £881. The Chairman said complaints had been made by consumers that the water had an unpleasant taste. Analyses showed that it was bacteriologically of the highest purity; and steps were being taken to remove the cause of complaint.

The Hebden Bridge and Mytholmroyd Gas Board have decided to advance the price of gas 3d. per 1000 cubic feet, and have delegated to the Finance Committee consideration of the question of insuring the gas-works and holder against damage by aircraft and bombardment.

At the last meeting of the Soyland (Halifax) District Council, it was reported that the Sowerby Bridge Council had intimated that the Local Government Board had refused to sanction the loan asked for to carry out gas improvements and extensions in Royd Lane; and therefore the work could not be proceeded with.

That the "Handbook of Patent Law of All Countries," by Mr. W. P. Thompson, Chartered Patent Agent, of No. 6, Lord Street, Liverpool, has reached a sixteenth edition, will be accepted as sufficient evidence that it has proved a useful guide to inventors; and if this applies to earlier issues, it should be even more true of the present edition, which has been completely revised. The subject is a big one, but it is treated in a simple and concise manner. The first section deals with Great Britain and Ireland, and the second with foreign patent laws. The compilation of the information contained in the latter section must have been a heavy task. Practice varies widely in different places—one of the extremes, apparently, being Hayti, where, we learn, "a patent can be obtained by a Special Act of Legislature." The book, it should be mentioned, is published by Messrs. Stevens and Sons, Limited, of No. 119, Chancery Lane, W.C.

The Manchester Gas Committee last Friday discussed the restricted lighting arrangements made by order of the military authorities. It was pointed out that the provisions for neighbouring towns permitted of better lighting than in Manchester; and a resolution was adopted that it was undesirable that the lighting order should be continued in its present form. A deputation was appointed to wait upon the Chief Constable with regard to the subject. The restrictions have naturally affected those shopkeepers who have had high and low pressure lamps fixed in their premises by agreement with the Corporation. Therefore, subject to consumers assenting to an extension of the periods of their agreements so as to ensure not less than three years' full use of the high-pressure lamps and one year's full use of the low-pressure lamps, as originally provided for, the Gas Committee have agreed to suspend all charges for the lamps in respect of the June quarter, and so long as they remain wholly out of use in consequence of the restrictions order.

APPLICATIONS FOR LETTERS PATENT.

10,834.—WILLETT, H. W. M., "Gas-compressors." July 26.
10,836.—WILLETT, H. W. M., "Gas-burners." July 26.
10,846.—PICKETT, H., "Gas-lighter." July 27.
10,859 —BROMHEAD, H. K., "Water-heater." July 27.
10,881.—ALLEN, G. H., "Gas-producer plants." July 27.
10,935.—RAMSAY, J. H., and LOWE, F. R., "Purifying gas." July 28.

WANTED, FOR SALE, CONTRACTS, &c., ADVERTISEMENTS IN THIS WEEK'S "JOURNAL."

Appointments, &c., Vacant.
ENGINEER. Romford Gas Company. Applications by Aug. 20.
WORKS CHEMIST. Birmingham Gas Department.
MECHANIC. No. 6077.
SULPHATE MAKER. Peterborough Gas Works.
MAIN TESTER. Devon Gas Association.
FITTERS (COOKERS). No. 6076.
STOKERS. Winchester Gas-Works.

Plant, &c. (Second-Hand), Wanted.
TOWER SCRUBBER AND COAL ELEVATOR. No. 6074.

Meetings.
BARNET GAS AND WATER COMPANY. Holborn Restaurant. Aug. 30. 12.30 o'clock.
BRIGHTON AND HOVE GAS COMPANY. 5, Great Winchester Street, E.C. Aug. 27. One o'clock.
NORTH MIDDLESEX GAS COMPANY. 5, Great Winchester Street. E.C. Aug. 30. 2.30 o'clock.
RIDDINGS GAS COMPANY. 139, Cannon Street, E.C. Aug. 27. Eleven o'clock.
SOUTHGATE GAS COMPANY. 5, Great Winchester Street, E.C. Aug. 26. 3.45 o'clock.

TENDERS FOR

Coal.
BRADFORD GAS DEPARTMENT. Tenders by Aug. 30.
CLACTON URBAN DISTRICT COUNCIL. Tenders by Aug. 18.
LIMERICK GAS DEPARTMENT. Tenders by Aug. 16.

Sulphuric Acid.
PETERBOROUGH GAS COMPANY.

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Clauses and Precedents in
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Being a Comparison of the Provisions contained in the Model Bills, in Special and Municipal Acts, and in Provisional Orders, 1910 to 1914, relating to these Public Services.

Compiled and noted by **JACQUES ABADY,** of the Middle Temple, Barrister-at-Law.

WALTER KING, "JOURNAL" OFFICES, 11, BOLT COURT, FLEET STREET, LONDON, E.C.